THE IRON TRADE REVIEW

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INCREASED BUYING

EXPECTED TO RESULT FROM LOWER PRICES.

Iron Ore Interests Will Probably Conform to General Policy of Readjustment—Pig Iron Market Strong.

The action of the steel manufacturers in reducing prices of billets, sheet bars, plates, structural shapes, merchant pipe and wire nails was made inevitable by the concession on steel bars, and is welcomed by the trade, as the finished material market, with the exception of some increase in contracting for steel bars, has been stagnant during the past week. The action was prompted by the strongest dictates of wisdom, and improvement in demand can be reasonably expected. Although the opinions of consumers may differ as to whether some of the reductions are adequate, the splendid crop prospects and improved financial conditions furnish reason for the belief that a large amount of buying can not long be delayed. It is generally conceded that much good had been accomplished by the success of the price maintenance policy up to the time of the reduction of the price of steel bars.

Iron Ore Prices

When, at the meeting of Lake Superior ore interests in Cleveland, last February, it was decided to reaffirm the 1907 prices, the action was taken with extreme reluctance on the part of the ore representatives, who preferred to adhere to the time honored custom of not fixing prices until it became evident that furnace companies were ready to contract for their season requirements. Reaffirmation was decided upon solely because it was urged by steel manufacturers, who believed that it was an absolutely necessary part of the plan of preventting general demoralization of prices of all iron and steel products. It is now very probable that, in harmony with the idea of co-operation, all ore interests will reduce their base quotations 50 cents per ton. It is understood that one interest, which has not usually acted with the others, has already disposed of a large tonnage at a reduction of 50 cents per ton. It may safely be predicted, however, that in no event will a greater reduction than 50 cents be made. It is now estimated that the Lake Superior ore movement for the season will amount to about 22,000,000 tons, about half of the tonnage of last year, of which 14,000,000 tons will be shipped by the United States Steel Corporation.

Steel Bars

Following the announcement of the new price of steel bars, a fair amount of contracting has been done, but as large tonnages on old contracts had not been specified, and as general conditions in finished lines were unsettled, contracting was not so heavy as would have resulted under more favorable conditions. Reports of heavy buying of steel rails by foreign countries and American railroads are erroneous.

Pig Iron is Strong

In spite of the dullness in finished lines, the pig iron market has shown increased strength. Although sales have not been so numerous, and inquiry has decreased, the tonnage sold has been of very fair volume, and includes 20,000 tons sold to cast iron pipe interests, a considerable tonnage of basic and malleable, and a limited amount of Bessemer. The principal transaction of the week was the closing by the Page Woven Wire Fence Co. for its three years' requirement of basic, amounting to about 100,000 tons, on a sliding scale basis, to be fixed by the average monthly selling prices of basic iron. It is not anticipated that the reductions in the prices of ore will have any important effect on the pig iron market, as pig iron prices have already sharply declined, and an immense tonnage of ore sold at the old prices is still on hand in furnace yards and on docks.

Coke and Old Material

The old material market shows more activity, but buying is confined largely to dealers. There is some improvement in foundry coke, and consumers are closing for their requirements for 12 months. Prices are firm.

NEW SCHEDULE

Announced by Judge Gary After Meeting of Manufacturers.

(Special Telegram.)

New York, June 10.—After the meeting of steel manufacturers last night, Judge Gary issued the following statement:

"The representatives of the leading steel manufacturing companies have been in session during the day. It is understood that the price of iron ore has been or will soon be reduced 50 cents per ton base. Each one of the steel manufacturers expressed the opinion that there should be a readjustment in the prices of the respective commodities as follows:

"Billets, from $28 per ton to $25, Pittsburg; sheet bars from $29 per ton to $27, Pittsburg; plates, from $1.70 per 100 pounds to $1.60, Pittsburg; structural iron, from $1.70 per 100 pounds to $1.60, Pittsburg; merchant pipe, a reduction of two points or $4 per ton, Pittsburg; wire nails, from $2.05 per 100 pounds to $1.95. Sheet and tin plates were reduced early in the year, therefore no changes were considered in the prices of these products. It is hoped these changes will not necessitate a general or radical readjustment of wages, which it is desirous to avoid."

THE WEEK IN IRON CENTERS

PITTSBURG.

Large Transaction in Basic—Effect of New Price Schedule Uncertain.

Office of THE IRON TRADE REVIEW, 510 Park Bldg., June 9.

The iron and steel industry has reached the most interesting stage of the present depression. The atmosphere has been surcharged with a spirit of expectancy, confined not merely to buyers looking for price concessions but also to sellers deeply concerned as to seeing what course would be adopted at the New York meeting. It is too early to predict the effect of the new schedule on the market.

The recent concession made by the makers of steel bars and kindred lines, dominated by the price of bar material, was the immediate cause of the disturbed state of the market. The reduction coming so abruptly, was the signal for the circulation of countless rumors which, though unfounded at the time, have added their effect in keeping buyers in a position of uncertainty as to the future of the market.

It cannot be said there has been a general and marked increase in the sales of steel bars the past week, although it is not yet believed that sufficient time has elapsed to permit of a thorough test of the effect of the new level. As might be assumed, the cut in bars has raised misgivings among some makers and directly influenced lines of manufacturing and there are advocates of the proposition to restore the former price as soon as advisable.

Pig iron is enjoying a moderate activity and a firmer tone prevails, but prices are not making any perceptible advances. A transaction of more than passing interest has been the closing for its three years' requirements of basic, aggregating about 100,000 tons by a melter in the Pittsburg district.

Pig Iron.—The market is moderately active and is firmer, but it is not apparent that it is progressing very rapidly as to gaining strength. Fewer evidences of the excitement that characterized the market in the first stages of the present buying movement are in sight and it would appear that soundness has increased as the large tonnage reports have subsided.

The leading transaction of the week in this territory is the closing by the Page Woven Wire Fence Co. for its three years' requirements of basic for its Monessen, Pa., plant, beginning July 1. The iron will be furnished by W. P. Snyder & Co., controlling the Shenango Furnace Co. stacks. The monthly tonnage expected to be taken under normal conditions is about 2,500, making the total amount of iron involved, about 100,000 tons. The contract is upon a sliding scale basis which will be fixed by the average monthly selling price of basic iron. The Page company has just completed additional open-hearth capacity at its Monessen plant. The withdrawal of the Page tonnage from the market will strengthen the basic situation in this territory and the transaction casts heightened interest upon the contract for basic for a term of years at over 100,000 tons a year which the Pittsburg Steel Co. is now arranging to close.

THE NEW PRICES.

Owing to the fact that the reduction in prices of billets, sheet bars, plates, structural material, merchant pipe and wire nails was not decided upon until Tuesday night, after nearly all of our market reports had been written, and as it has been impossible for jobbers to revise their store prices in accordance with the new schedule, the new quotations are not given in our market reports on pages 1068-1076 of this issue, but will be found on page 1067.

Editor THE IRON TRADE REVIEW.

The prices ruling in basic are from $15.25 to $15.50 valley for prompt or third quarter delivery. A lot of 5,000 tons to an eastern consumer for third quarter went this week at $15.50 valley furnace.

The foundry situation is unchanged at $14.75 to $15 valley and there has been buying this week from 500 tons down to carloads at this price. The inquiry from the Pittsburg district is better.

Bessemer is showing some life. The $16 valley price appears the minimum although this has been shaded recently. We note a carload sale to Pittsburg this week at a trifle better than $16 valley. Some sellers are asking $16.50 and a 100-ton deal at this figure, is reported. There is an inquiry out for 300 tons to this district for June, July and August. Considerable malleable talk is abroad, but no sales are reported. A local steel company this week took 500 tons of low phosphorus iron for June, July and August at about $21.50 delivered.

The southern market holds at $12 Birmingham. One furnace is quoting under this price, but one of the leading merchant sellers is making this figure the minimum at which it will dispose of grades designated by itself and is asking $12.50 Birmingham as the general market. We note several hundred tons to Pittsburg this week at $12 Birmingham and 200 tons to Cleveland at the same price, the iron being for third quarter delivery.

Basic and Bessemer stocks in the valleys are now about 45,000 tons. Operations are unchanged except that Struthers having undergone an accident, is banked. For prompt and third quarter delivery on northern iron, we quote as follows, the higher quotation on Bessemer being for chill cast.

Bessemer, valley	$16.00 to 17.00
Bessemer, Pittsburg	16.90 to 17.90
No. 1 foundry, Pittsburg	15.90 to 16.25
No. 2 foundry Pittsburg	15.65 to 15.90
Gray forge, Pittsburg	14.90 to 15.15
Basic, valley	15.25 to 15.50
Basic, Pittsburg	16.15 to 16.40

Ferro-Manganese.—The market is lively and sales are being made with regularity. It is estimated that upwards of 1,500 tons were taken by different interests of the week. We note the sale of 500 tons to a southeastern Ohio interest and 200 tons to a southwestern consumer at about $44 Baltimore for delivery into the fourth quarter. Fifty per cent ferro-silicon is showing a stiffening tendency. We quote 80 per cent ferro-manganese for prompt and future shipment, at $44 to $45 Baltimore or $45.95 to $46.95 Pittsburg.

Imported 50 per cent ferro-silicon is quoted $70 Pittsburg on forward deliveries; domestic 12 per cent, $29; 11 per cent, $28; 10 per cent, $27. The lower grades of imported ferro-silicon are upon about the same basis. These quotations are applicable to Pittsburg territory.

Plates.—Some of the mills have recently enjoyed a mild revival of activity in plates, but this has not been continued

and the dull tone in the market remains. A number of projects are in sight which will require considerable tonnage, but for various reasons the completion of these is still held up. Several small mills are shading official prices. We quote:

Tank plate, ¼ inch thick, 6¼ to 100 inches, 1.70c f. o. b. mill Pittsburg. Extras are as follows per 100 pounds. Boiler and flange steel plates, 0.10c; A. B. M. A. and ordinary firebox steel plates, 0.20c; still bottom steel, 0.30c; marine steel, 0.40c; locomotive firebox steel, 0.50c; all sketches, excepting straight taper plates varying not more than 4 inches in width at ends, narrowest end not being less than 30 inches, 0.10c; circles, 0.20c. Plates in width over 100 inches up to 110 inches, 0.05c; over 110 inches up to 115 inches, 0.10c; over 115 inches up to 120 inches, 0.15c; over 120 inches up to 125 inches, 0.25c; over 125 inches up to 130 inches, 0.50c; over 130 inches, 1c. Gages under ½ inch to and including 3/16 -inch plate on thin edges, 0.10c; under 3/16 to and including No. 8, 0.15c; under No. 8, and including No. 9, 0.25c. Five cents extra for less than carloads. Terms, net cash in 30 days.

Sheets.—The sheet situation is showing little change. Contracting for forward deliveries is at a minimum, and as stocks in consumers' hands are extremely low the orders received are being immediately specified against. Mill operations are upon a less than 50 per cent basis. Galvanized sheets are the most active. We quote:

Black steel sheets, one pass, cold rolled: Nos. 11-12, 2.10c; Nos. 13-14, 2.15c; Nos. 15-16, 2.20c; Nos. 17-21, 2.25c; Nos. 22-24, 2.30c; Nos. 25-26, 2.35c; No. 27, 2.40c; No. 28, 2.50c; No. 29, 2.60c; No. 30, 2.70c. Galvanized: Nos. 10-11, 2.45c; Nos. 12-14, 2.55c; Nos. 15-16, 2.65c; Nos. 17-21, 2.80c; Nos. 22-24, 2.95c; Nos. 25-26, 3.15c; No. 27, 3.35c; No. 28, 3.55c; No. 29, 3.70c; No. 30, 3.95c. Blue annealed; Nos. 11-12, 1.85c; Nos. 13-14, 1.90c; Nos. 15-16, 2c. Corrugated roofing, $1.75 per square for No. 28 painted, 2½-inch corrugation, and $3.10 per square on galvanized roofing, 2½-inch corrugation, No. 28.

Tin Plate.—The past month has produced little variation in the tin plate market. Some consumers who ordinarily take out their requirements in the first and second quarter will prolong their specifying to the third quarter, by reason of having contracted later than usual. This condition n connection with the preparation of the canning interests for a large fruit and vegetable crop, affords the mills good prospects for summer operations. We quote:

Coke tin plate, 100-pound basis, 14 x 20, $3.70 f. o. b. mill, Pittsburg district. Terms, 30 days, less 2 per cent for cash in 10 days.

Rails and Track Material.—The Carnegie Steel Co. closed in the week for 2,000 tons of standard sections for lumber companies and about 2,000 tons of light rails. Enough specifications are being received to keep in operation at a gaited production mills 1 and 2 at Edgar Thomson, but mill No. 3 is still idle. There is considerable activity in the light rail market at present, and a good tonnage of business is coming out regularly. Low prices are being named by rerollers in their competition for business. The railroads are buying spikes in minimum lots for immediate use. On present specifications on Bessemer rails we quote as follows:

Fifty-pound and heavier, 500-ton lots and over, $28; carloads and less than 500 tons, $30; less than carload lots, $32; 8-pound, $36; 12-pound, $32; 16-pound, $30; 20-pound, $29; 25 to 45-pound, $28; angle splice bars for standard sections, $1.65; standard spikes, $1.70 to $1.80 Pittsburg; hand spikes, $1.80 to $1.90 Pittsburg.

Steel.—The official $28 Pittsburg price is being undersold by middle men who have obtained their steel by advantageous exchange deals, and by the Buffalo interest which has been converting its scrap and pig iron it has had on hand, and offering the billets about $3 under the market. Two transactions of 2,500 tons to northern Ohio users which were closed at prices approximating $26 delivered or $24.50 mill, are attributed to this seller. It is reported that this maker has disposed of all the steel it has to offer. The sheet and tin bar situation is relatively good, as the mills are operating favorably and consumers are taking large tonnages.

We continue to quote Bessemer and open-hearth billets, $28 Pittsburg, and forging billets at $30 Pittsburg, subject to the division of the freight charge over $1 and not exceeding $3, and sheet and tin bars at $29.50 Pittsburg, valley and Wheeling territory, and $29 Pittsburg for delivery to other points.

Hoops, Bands and Cotton Ties.—The reduction in steel bar material a week ago was followed by corresponding cuts in the prices of steel hoops and bands, the latter being included on the bar card. Hoops in carload lots are now selling at 1.80c and in less than carloads 1.90c against 2c and 2.10c previously, and bands 1.40c against 1.60c. These changes have not affected the market situation, as hoops and bands have been moving briskly, and have been in a comparatively strong position. There is little buying of cotton ties at the present time. We quote the following official prices:

Cotton ties, 85c per bundle Pittsburg, plus the freight on lots of 3,000 bundles or more, and 88c per bundle Pittsburg for less than 3,000 bundle lots.

Hoops in carload lots, 1.80c; in less than carload lots, 1.90c; bands, 1.40c; base half extras as per standard steel.

Merchant Bars.—The recent reduction in the price of steel bars brought out some business in the week, mainly from implement manufacturers, but it is generally believed the new quotation has not been established long enough to permit its full effect to be gaged. Some makers report a brisk trade while others are apparently dissatisfied with results. It is evident that there is a considerable divergence of opinion among manufacturers as to the wisdom of the cut or as to the prolongation of the opportunity to buyers to cover at the lower rate. It is even now being advocated by some sellers that a raise in the price of bars be made July 1 and that the 1.60c quotation be gradually restored. The cut in bar iron has not been followed by any marked increase of trade and the market is not active. Shafting is fairly steady. We quote revised prices as follows:

Common iron bars, 1.40c Pittsburg in carload lots and over; 1.45c in less than carloads; 1.32c to 1.35c base Pittsburg plus freight to point of shipment on western deliveries; Bessemer steel bars, 1.40c; plow and cultivator, 1.40c; channels, angles, zees, tees, zees, under 3 inches, 1.50c, all f. o. b. Pittsburg. The following differentials are maintained on steel: Less than 2,000 pounds, 0.10c advance; less than 1,000 pounds of a size, 0.30c advance. Cold rolled and ground shafting 56 per cent in carloads, deliver per cent in less than carloads, delivered in base territory; open-hearth spring steel, 2.25c to 2.50c; sleigh shoe flats, 1.60c to 1.65c; smooth finished machinery steel, 1.90c to 2c; toe calk, 2.10c to 2.15c. Planished and machine straightened tire steel is 1.80c base. Iron finished tire under 1½ by 1½ inches, 1.75c; iron finished tire, 1½ by 1½ inches and over, 1.60c. All tire subject to ½ extra on the steel card.

On cold rolled strip steel, width 1½ inches and wider and 0.100 inch and thicker, we quote base prices per 100 pounds, $3.60 on hard and $3.75 on soft.

Structural Material.—There are no developments of note in structural lines. Railroads are showing no greater inclination to carry out improvements other than those absolutely necessary. Contracts from other classes of builders are limited. Fabricating prices are low. The mills are receiving a fair amount of specifications on contracts, and have had good rolling schedules lately. No contracts of note

were awarded this week. Structural steel prices are unchanged and we quote:

Beams and channels, 15-inch and under, 1.70c; over 15 inches, 1.80c; zees, 1.70c; tees, 1.75c; angles from 3 to 6 inches, 1.80c; universal and sheared plates, 6¼ inches and wider, 1.70c base.

Merchant Pipe.—Conditions in merchant pipe continue to steadily improve and prospects are encouraging. There are a large number of oil and gas line projects under development which, it is estimated, will take not less than 2,500 miles of pipe when they reach the market. Considerable business of this sort is now being taken by the mills. Spang, Chalfant & Co. have enough line pipe work on their books to keep their No. 5 mill, their large mill at Etna, in steady operation until the middle of November. This company has its puddle mill on in full, and this week put on its bar mill and 12 and 16-inch mill at work at 50 per cent capacity. Merchant steel pipe prices are steady, but iron pipe is not so firm. A local contracting firm this week took three miles of 6-inch wrought iron pipe for Nevada mine work. We continue to quote the following official discounts to consumers in carloads, with an additional one point and five off to jobbers:

	—Steel—		—Iron—	
	Black.	Galv.	Black.	Galv.
⅛ and ¼ inch.....	65	49	63	..
⅜ inch	67	53	65	51
½ inch	69	57	67	55
¾ to 6 inches.....	73	63	71	61
7 to 12 inches.....	70	55	68	53
EXTRA STRONG PLAIN ENDS.				
⅛ to ⅜ inch.....	58	46	56	44
½ to 4 inches.....	65	53	63	51
4½ to 8 inches.....	61	49	59	47
DOUBLE EXTRA STRONG PLAIN ENDS.				
½ to 8 inches.....	54	43	52	41

Boiler Tubes.—Several fair sized contracts for boiler tubes were closed by the railroads this week, but as a rule the steam lines are buying little for forward delivery. The market is not active. We continue to quote the following discounts:

	Iron.	Steel.
1 to 1½ inch.....	42	47
1¾ to 2¼ inch.....	42	59
2½ inch	47	61
2¾ to 5 inch.....	52	65
6 to 13 inch.....	42	59

2¼ inches and smaller, over 18 feet, 10 per cent net extra.
2¾ inches and larger, over 22 feet, 10 per cent net extra.

Wire Products.—The trade in wire products as in other lines is in a state of expectancy, waiting to see what action manufacturers may decide to take on prices. The market is moving along evenly, but as the spring season is ended, there is not a great measure of activity discernible. We quote as follows:

Wire nails, jobbers' carload lots, $2.05; retailers' carload lots, $2.10; less than carloads, $2.15; painted barb wire, $2.20 for jobbers in carloads; retailers in carloads, $2.25; and less than carloads, $2.35, with 30c for galvanizing; plain wire, 1.90c for jobbers, and 1.95c by carload.

Wire Rods.—The movement of rods is by specifications on contracts, and prices are nominal. We quote $35 Pittsburg on Bessemer and $36 Pittsburg on open hearth.

Coke.—A number of smaller consumers of foundry coke are closing for their requirements 12 months ahead at prevailing prices. There is also a larger movement by specifications against old contracts, and the market exhibits more life. In furnace coke there is also fair activity. Some of the independent interests are putting more ovens in blast, and the H. C. Frick Coke Co. has recently materially increased its coke capacity. The Westinghouse interests have not yet closed for their annual requirements of foundry coke, but it is understood they have received a price of $2 and will probably award the order in a few days. The *Courier* for the week ending May 30 shows 14,773 active ovens, with an output of 153,202 tons, compared with 14,369 ovens and 169,888 tons the preceding week. We continue to quote standard Connellsville foundry coke at from $2 to $2.25 ovens and standard Connellsville furnace coke $1.65 to $1.75 ovens.

Old Material.—The recent aggressive buying in this district by several steel making interests having about ended, and the effects absorbed, the market has resumed its former dullness. Some of the large steel companies which were recent sellers have withdrawn from the market under the prices now prevailing. A waiting spirit dominates the situation, this being displayed by both buyers and sellers. We quote nominally delivered to the Pittsburg district as follows:

Heavy melting scrap, $12.75 to $13.25; re-rolling rails, $14 to $14.50; bundled sheet scrap, $9 to $9.50; iron axles, $18.50 to $19.50; old iron rails, $15 to $16; No. 1 wrought scrap, $13.25 to $13.75; old car wheels, $13 to $13.50; low phosphorus scrap, $17.50 to $18; machine shop turnings, $8 to $8.50; cast borings, $7.50 to $8; No. 1 cast scrap, $13.75 to $14.25.

The Massillon Iron & Steel Co. was the low bidder for cast iron pipe which the Youngstown, O., water works is buying, the bid being $21.25 per ton.

CHICAGO.

Pig Iron Market Strong—Finished Material Unsettled.

Office of THE IRON TRADE REVIEW,
1328 Monadnock Block, June 9.

The market this week received the news of the tonnages of steel bars placed immediately following the reduction in price and it is understood that the leading interest took contracts for 40,000 tons. An additional 15,000 tons is reported to have been placed with independent mills. The consumers' needs have by no means been filled and the immediate effect of the reduction was out of harmony with a satisfactory buying sentiment. It is expected at the same time that this month will see the placing of normal contracts by implement interests. In finished lines generally, there was a noticeable lack of initiative and confidence and trading was very dull. The pig iron market adds to its strength apparently with each week and the continuance of buying much beyond the expectation of furnace interests has brought much encouragement to this branch of the market. Pig iron prices in this territory are very firm at $12 Birmingham for No. 2 and $17.50 for northern No. 2 at the furnace. The volume of tonnage placed during the week was very fair and well distributed. The scrap market is bolstered up in its condition of present strength by the continued buying of dealers, but a sagging movement is anticipated.

Pig Iron.—If anything, pig iron shows greater strength at this writing than at any stage of the present advance. Buying has continued longer in the face of the increased price and in much greater volume than was anticipated and although the total tonnage placed last week was perhaps slightly less than during the preceding week, a very encouraging quantity of iron, both northern and southern, was bought and inquiry is still coming in freely. The active northern stacks are holding firmly at $17.50 to $18 for No. 2 and malleable Bessemer for delivery through the third quarter. One southern producer, the Tennessee Coal, Iron & Railroad Co., has put its price at $12.50 Birmingham for No. 2 and will accept no business under that price. Most of the southern furnaces are selling at $12, however, and taking all of the business offered for delivery through the third quarter. The iron purchased was well scattered with a few good sized lots interspersed among the more numerous smaller quantities. It is not considered likely that the large number of idle stacks

will be affected by the price until it is at least $1.50 higher than at present, for orders are scarcely attractive to such furnaces as are out, at less than $13.50. It may be expected, however, that the number of active stacks among the larger interests, which have been taking tonnage recently, will be much increased in the next 60 or 90 days. We quote as follows:

Lake Superior Charcoal	$19.50 to 20.00
Northern Foundry No. 1	18.00 to 18.50
Northern Foundry No. 2	17.50 to 18.00
Northern Foundry No. 3	17.00 to 17.50
Southern Foundry No. 1	16.85 to 17.35
Southern Foundry No. 2	16.35 to 16.85
Southern Foundry No. 3	15.85 to 16.35
Southern Foundry No. 4	15.35 to 15.85
Southern No. 1 Soft	16.35 to 16.85
Southern No. 2 Soft	15.85 to 16.35
Southern Gray Forge	14.35 to 14.85
Southern Mottled	15.10 to 15.60
Southern Silveries, 4 per cent Silicon	17.85 to 18.35
Southern Silveries, 5 per cent Silicon	18.35 to 18.85
Southern Silveries, 6 per cent Silicon	19.35 to 19.85
Jackson Co. Silveries, 6 per cent	18.90 to 19.40
Jackson Co. Silveries, 8 per cent	20.90 to 21.40
Jackson Co. Silveries, 10 per cent	22.90 to 23.40
Malleable Bessemer	17.50 to 18.00
Standard Bessemer	18.25 to 18.75
Alabama Basic	15.85 to 16.35

Billets and Rods.—There is nothing of interest to report in connection with either billets or rods. Uncertainty prevails regarding the future price, but, apart from this consideration, there is apparently no demand from consumers. We quote for Chicago delivery, rolling billets $29.50, forging billets $31.50. Wire rods we quote Bessemer $35, open-hearth $36, chain rods $37, all f. o. b. Pittsburg.

Plates.—There is no business in plates and will be none in all probability until car and boat building begin to show some activity. We quote prices unchanged for Chicago delivery, as follows:

Plates, ¼-inch and heavier, 6¼ to 100 inches wide, either universal or sheared, 1.88c to 1.91c Chicago. For extras see Pittsburg report. Jobbers' prices for shipment from local stocks are as follows: Tank steel, ¼-inch and heavier, up to 72 inches wide, 2.10c to 2.20c; from 72 to 96 inches wide, 2.20c to 2.30c; 3/16-inch up to and including 60 inches wide, 2.20c to 2.25c; 72 inches wide, 2.45c to 2.55c; No. 8, up to 60 inches wide, 2.20c to 2.25c. Flange and head quality, 25c extra.

Sheets.—The status with regard to sheets remains practically stationary and the demand is very limited. For mill prices see Pittsburg report. We quote for delivery from local stocks as follows:

No. 10, 2.20c to 2.25c; No. 12, 2.25c to 2.30c; No. 14, 2.30c to 2.35c; No. 16, 2.40c to 2.50c; Nos. 18-20, 2.60c to 2.65c; Nos. 22-24, 2.65c to 2.70c; No. 26, 2.70c to 2.75c; No. 27, 2.75c to 2.80c; No. 28, 2.85c to 2.95c; No. 30, 3.25c. Galvanized sheets, No. 10 to 16, 3.05c to 3.15c; Nos. 18 to 20, 3.15c to 3.25c; Nos. 22 to 24, 3.30c to 3.35c; No. 26, 3.50c to 3.55c; No. 27, 3.70c to 3.75c; No. 28, 3.90c to 4.00c; No. 30, 4.40c to 4.50c.

Structural Steel.—The condition of the structural market is indicated by the fact that the principal fabricator received contracts in this territory during the past week for a total of 1,300 tons, not one order among which exceeded 100 tons. Bids were received for a cement plant for the company which will build the Los Angeles viaduct. The steel work contained a large proportion of miscellaneous material, but it is interesting to note a difference of $8,565 between the three low bidders. Of the contracts in prospect, there is 500 tons pending for a car barn for the City Railway Co. of Chicago, from 1,000 to 1,500 tons for a Y. M. C. A. building in Milwaukee, and the steel for the new Chicago city hall. B. A. Eckhart is preparing to ask for bids on a new steel warehouse for erection in this city. Prices are unchanged and we quote:

Beams and channels, 3 to 15 inches, inclusive, 1.88c to 1.91c delivered Chicago. For extras see Pittsburg report. Quotations from store are as follows for carload lots and over:

All angles, 3 inches and larger, including 6 inches, $2.05 per 100 pounds; angles over 6 inches, $2.15 per 100 pounds base; beams, 3 to 15 inches, inclusive, $2.05 per 100 pounds, base; channels, 3 inches and larger, $2.05 per 100 pounds, base. Les than carload lots are $1 a ton higher than foregoing prices.

Rails and Track Supplies.—Specifications on contracts for standard section rails are being received from the railroads in very satisfactory volume. Orders were taken last week for about 7,000 tons in miscellaneous lots, among which was an order from the Chicago-Milwaukee electric road for 1,000 tons. Light rails are moving fairly well and the light rail mill at the South Works is in operation. We quote as follows:

Standard rails, $28 f. o. b. mill, full freight to destination; light rails, 25-pound to 45-pound, $28; 20-pound. $29; 16-pound, $30; 12-pound, $31. Track supplies, f. o. b. Joliet, angle bars, 1.65c; spikes, 1.80c to 1.90c; track bolts, with square nuts, 2.30c to 2.40c; with hexagon nuts, 2.45c to 2.50c. Small railroad and square boat spikes, 1.90c base, f. o. b. Pittsburg.

Merchant Pipe and Boiler Tubes.—For mill prices see Pittsburg report.

We quote prices from store unchanged as below. A concession of one-half to one point from these prices is allowed by Chicago jobbers on carload orders shipped from local stocks. We quote for less than carload lots as follows:

	—Steel— Black.	Galv.
¼ to 6 inches, inclusive	71.2	61.2

BOILER TUBES.

	Steel.	Iron.	Seamless.
2¼ to 5 ins., inclusive	63.2	50.2	49.2

Store prices for wrought iron pipe, carload lots, from Chicago stocks, are as follows: One-eighth to ¼-inch 59; ⅜ inch, 61; ½-inch, 63; ¾-inch to 6 inches, 68; 7 inches to 12 inches, 65. Boiler tubes from store are unchanged, as follows:

	Steel.	Iron.	Seamless.
1 to 1½ inches	35	35	35
1¾ to 2¼ inches	50	35	35
2½ inches	52½	35	35
2¾ to 5 inches	60	47½	47½
6 inches and larger	50	35	..

Cast Iron Pipe.—The contract for 700 tons of 16-inch pipe for which bids were asked by the city of Cincinnati, was placed with the United States Cast Iron Pipe & Foundry Co. Five or six additional contracts covering from 200 to 700 tons each were also taken by the same manufacturer. The general demand for small size pipe from 4-inch to 8-inch has been very good and a firmer tone prevails in connection with these sizes. A 450-ton contract at Youngstown is understood to have been taken by the Massillon Iron & Steel Co. Prices while stronger are unchanged and we quote for Chicago delivery. 4 to 6-inch pipe, $27; 6 to 16-inch, $26; larger sizes, $25; gas pipe, $1 a ton higher.

Wire Products.—Rumors current regarding reductions in various wire products are not authorized. The trade is quiet and probably will remain so through the next two months. We quote as follows, Chicago delivery:

Wire nails, $2.23; painted barb wire, $2.38; galvanized barb wire, $2.68; smooth annealed wire, $2.08; smooth galvanized wire, $2.38; polished staples, $2.23; Galvanized staples, $2.63. Carload lots to retailers, 5 cents higher; less than carload lots, 15 cents higher.

Coke.—The large tonnage of coke sold from Pittsburg in the last three weeks has established a firmer and higher level of prices, particularly with regard to furnace coke. This coke has advanced nearly 50 cents a ton. Foundry coke has ben sold in proportionately smaller quantities, but it will not be surprising to find the price of Standard Connellsville grades

going to $2.50 at the ovens. We quote standard Connellsville furnace coke $1.85 to $2 and foundry coke, $2.25 at the ovens.

Merchant Bars.—Coincident with and following the reduction in the price of steel bars, it is understood that the leading interest took contracts covering 40,000 tons and that the independent mills received orders for close to 15,000 tons. This was not all buying by implement makers and a liberal contracting for the year's requirements by these interests is still looked for during the remainder of the month. The reduction coming as it did has brought into the market a very general feeling of uncertainty, discontent and criticism that has proven harmful to trade. The price of hoops has been reduced $4 per ton. Store prices have been reduced in keeping with the mill concessions. With the exception of the steel bar contracts placed, the week has been a very quiet one for merchant steel and iron bars. We have revised our prices:

Bar iron, 1.50c to 1.53c; soft steel bars and bands, 1.58c, half extras; soft steel angles, less than 3 x 3, 1.68c; hoops, 1.98c base, full extras; planished or smooth finished tire steel, 1.98c; iron finish, up to 1½ x ½-inch, 1.93c base tire card; iron finish, 1½ x ½-inch and larger, 1.78c base, steel card; channel for solid rubber tire, ¾ to 1 inch, 2.28c; and 1⅛-inch and larger, 2.18c; smooth finished machinery steel, 2.18c; flat sleigh shoe, 1.83c; concave and convex sleigh shoe, 1.93c; cutter shoe, 2.36⅛c; toe calk steel, 2.33c; railway spring, 1.98c; crucible tool steel, 7c to 9c, with higher prices asked on special grades. Quotations on shafting are 56 per cent off the list for carload lots, and 52 per cent off for less than carload lots, carload freight allowed to points in base territory. On iron and steel bars from local stocks, we quote as follows: Bar iron, 1.75c, full extras; soft steel bars, $1.80 per 100 pounds base, plus half extras; soft steel hoops, 2.40c, full extras.

Old Material.—An aggregate of 22,000 tons of scrap was offered by the railroads during the past week and on that part of the lists which was sold good prices were obtained. The lists included 5,200 tons from the Illinois Central, 2,500 tons from the Santa Fe, 1,500 tons from the Chicago & Northwestern, 2,000 tons from the Chicago, Milwaukee & St. Paul, 1,200 tons from the Northern Pacific railroad, 6,100 tons from the Baltimore & Ohio, and 3,500 tons from the Wisconsin Central. Nearly all of the buying was on the part of the dealers. While the price situation presents good prices, they are not firm at the present level and are due almost entirely to dealers' activity. Rerollers are still strong and we quote them higher. Otherwise prices are unchanged from a week ago, and we quote gross tons in the first paragraph as follows:

Old car wheels	12.50 to 13.00
Old iron rails	15.50 to 16.00
Re-rolling rails (3 ft. and over)	14.00 to 14.50
Old steel rails (3 ft. and under)	12.25 to 12.75
Light section relayers, 45 lbs. and under, subject to inspection	21.00 to 23.00
Relaying rails, subject to inspection	19.00 to 19.50
Frogs, switches and guards	11.75 to 12.25
Heavy melting steel	11.50 to 12.00

We quote, net tons, as follows:

No. 1 R. R. wrought	$11.25 to 11.75
No. 2 R. R. wrought	10.00 to 10.50
Knuckles, couplers and springs	11.00 to 11.50
Shafting	14.00 to 14.50
Iron car axles	16.50 to 17.00
Steel car axles	15.00 to 15.50
Dealers' forge No. 1	9.50 to 10.00
Pipes and flues	7.75 to 8.25
No. 1 cast, 150 lbs. and less	11.75 to 12.25
No. 1 mill	6.75 to 7.25
Mixed busheling (Nos. 1 and 2)	6.75 to 7.25
Country sheet	5.25 to 5.75
No. 1 boiler cut	7.00 to 7.50
Boiler punchings	10.00 to 10.50
Cast borings	4.50 to 5.00
Mixed borings, etc	4.50 to 5.00
Machine shop turnings	5.25 to 5.75
Railroad malleable	10.25 to 10.75
Agricultural malleable	9.50 to 10.00
Stove plate and light cast scrap	10.00 to 10.50
Old iron splice bars	13.75 to 14.25

CLEVELAND.

Extreme Dullness in Finished Lines—Pig Iron Quiet.

Office of THE IRON TRADE REVIEW, Browning Building, June 9.

Iron Ore.—Ore shipments are still very light and it does not seem probable that the movement for June will exceed 2,000,000 tons. As the decrease compared with last year is already nearly 6,000,000 tons, it seems probable that on July 1 shipments will be fully 10,000,000 tons behind the total of July 1, 1907. It is now estimated that the shipments for the season will amount to about 22,000,000, of which 14,000,000 will be moved by the Steel Corporation fleet.

On base ores with the guarantee of 55 per cent on old range and Mesabi Bessemer, and 51½ per cent on old range and Mesabi non-Bessemer, we quote as follows: Old range, Bessemer, $5; Mesabi Bessemer, $4.75; old range non Bessemer, $4.20, and Mesabi non-Bessemer, $4.

Pig Iron.—Inquiries show a marked decrease and very little iron has been sold this week. Owing to the unsettled condition of affairs in finished lines and the possibility of lower ore prices, the pig iron market is at a standstill. For Cleveland delivery we quote as follows:

Bessemer	$16.90 to 17.10
No. 1 foundry	16.50 to 16.75
No. 2 foundry	16.15 to 16.25
No. 3 foundry	15.75 to 16.00
No. 2 southern	16.35
Gray forge	14.50 to 15.00
Lake Superior charcoal	19.50 to 20.00

Coke.—There is some improvement in foundry coke, but few transactions are reported. Prices are firm. We quote $1.75 and $1.85 at the ovens for furnace coke and $2.25 to $2.50 for high grade foundry coke.

Finished Material.—Since the announcement of the reductions in prices of iron and steel bars and hoops, the market has been extremely dull. Owing to the general expectation of further price reductions, buyers have hesitated, and even consumers of steel bars have shown no disposition to make contracts, as many of them have large tonnages on old contracts that have not yet been specified. There has been slight improvement on specifications of steel bars and one contract of 500 tons is reported. In other lines the volume of business is smaller than at any time since the depression set in last October.

Old Material.—A decided hardening of the market, despite the fair sized lists of railroad material which closed last week, is its chief characteristic. The prospect of even larger offerings by three of the more important eastern railroads this week failed to affect the market—in fact, following the course of the old material market both east and west, buyers are the only people in evidence, there being few if any sellers. Steel in all shapes is especially strong, and a number of changes have been made in the following quotations, f. o. b. Cleveland:

Old iron rails	$15.00 to 15.50
Old steel rails (re-rolling)	13.00 to 13.50
Old steel rails (under 6 ft.)	13.00 to 13.50
Old car wheels	12.75 to 13.25
Old steel boiler plate	11.50 to 12.00
Steel axles	17.00 to 18.00
Malleable iron (railroad)	12.00 to 12.50
Malleable iron (agricultural)	10.00 to 10.50
Heavy steel	12.50 to 13.00
Country mixed steel	10.00 to 10.50
Low phosphorus	15.50 to 16.50

We quote, net tons, as follows:

No. 1 R. R. wrought	12.50 to 13.00
No. 1 busheling	11.00 to 12.00
No. 1 machine cast	11.50 to 12.50
Iron axles	17.00 to 18.00
Axle turnings	9.00 to 9.50
Machine shop turnings	6.25 to 6.75
Grate bars	9.00 to 10.00
Pipes and flues	10.00 to 10.50
Tank iron	10.00 to 10.25
Hoop and band iron	6.50 to 7.50
Sheet iron	4.25 to 5.25
Wrought drillings	6.25 to 6.75
Stove plate	10.50 to 11.00
Cast borings	5.50 to 6.00

NEW YORK.

Fair Business in Steel Bars—Pig Iron Sales Continue.

Office of THE IRON TRADE REVIEW, Room 1005, No. 90 West St., June 9.

Pig Iron.—Conditions in the eastern market have proved disappointing to those prophets who predicted an early end to the buying movement. There is no increased activity among foundries as a rule, and current sales are

chiefly speculative, but, speculative or otherwise, they are holding up to an unexpected extent, resulting in the general stiffening of prices on fourth quarter iron and giving the market for earlier delivery a very strong undertone. The leading locomotive manufacturer last week placed contracts for 7,000 tons out of the 10,000 tons inquired for and is expected to close the remainder during the current week. Early delivery is specified on this iron, though much of it will not go into consumption before the last quarter. The American Brakeshoe & Foundry Co. has purchased a part of its requirements and the balance is under negotiation. The Central Foundry Co. has taken on a considerable tonnage and numerous smaller sales are reported. A heavy inquiry is current from pipe interests as well as from the general foundry trade. Prices in the north are about stationary; in the south the tendency is to advance on forward delivery as most producers have closed out their accumulations and taken enough orders to keep them busy for the next two months. The May sales of one southern interest alone are reported to have been 120,000 tons. We quote, tidewater delivery New York, as follows for spot and third quarter iron:

Northern foundry No. 1	$17.00 to 17.50
No. 2X foundry	16.50 to 17.00
No. 2 plain	16.00 to 16.50
No. 2 southern foundry	16.00 to 16.50
Malleable	17.50 to 18.00
Basic	15.50 to 16.00
Gray forge	15.50 to 16.00

Ferro-Manganese.—There is a good run of small orders, with occasionally one of considerable tonnage. The market is firm, ranging at seaboard from $44.50 to $45.50. In small lots the price is slightly higher.

Finished Materials.—Aside from the award to the Pennsylvania Steel Co. of a contract for 1,500 tons of steel needed for a Long Island viaduct of the Pennsylvania railroad tunnel system, the local market has been featureless and none of the important contracts pending has been let. The Boston Elevated is inquiring for 500 tons of rails and a brisk trade is reported in the frog and switch line.

Three important cast iron pipe contracts are booked for awarding tomorrow. New York City is to let the contract for 3,000 tons as well as for 3,100 tons for Staten Island water projects. Rome, N. Y., is to buy about 3,700 tons. About 800 tons for the New Haven Water Co. will be furnished by the United States Cast Iron Pipe & Foundry Co. Cast iron pipe prices have improved considerably during the last few weeks and recent lettings have been on a fairly profitable basis.

A fair tonnage of business is reported in plates, being made up of small lots for a wide variety of purposes. There is no shading in prices other than that on very narrow plates by two or three small mills in the Pittsburg district, which has been referred to from time to time. Pending a meeting of eastern bar iron interests at Philadelphia on Wednesday, the situation is very ragged and business is reported as low as 1.30c, New York, that being the figure at which a large consumer is understood to have purchased during the last few days. Steel bar business is of fair volume. Billets are apparently firm, one interest reporting that it was unable to shade $28, Pittsburg, with regular extras, on a small tonnage inquiry. We quote:

Angles, 3 to 6 inches x ¼-inch and heavier, 1.86c; beams, 3 to 15 inches, 1.86c; tees, 3 x ¼-inch and heavier, 1.91c; plates, carloads, tanks, 1.86c; marine boilers, 2.26c; bar iron, 1.56c; soft steel bars, 1.56c; sheets, No. 28, black, 2.66c.

Old Material.—Railway lists for June are fairly large, though still somewhat below the normal. The market is full of reports of moderate sized transactions, but little change is noticeable in the accumulations of the larger yards and it is probably true that these are exaggerations. The situation is thoroughly inactive, with no features. Steel mills generally are well stocked up; bar iron mills, in view of the uncertainties as to price, have bought sparingly and are forced to enter the market from time to time. We quote, gross tons, New York delivery, as follows:

Old iron rails	$14.00 to 14.50
Old steel rails, re-rolling	14.00 to 14.50
Relaying rails	20.00 to 21.00
Old car wheels	12.00 to 12.50
Old iron car axles	16.00 to 16.50
Old steel car axles	15.00 to 15.50
Heavy melting steel	10.50 to 11.00
No. 1 railroad wrought	13.50 to 14.00
Iron track scrap	12.00 to 12.50
Wrought pipe	9.00 to 9.50
Cast borings	5.00 to 5.50
Wrought turnings	7.50 to 8.00
Heavy cast scrap	12.50 to 13.00
Railroad malleable	9.00 to 9.50
Stove plate	9.00 to 9.50
Grate bars	9.50 to 10.00

CINCINNATI.

Heavy Sales of Pig Iron to Cast Iron Pipe Interests.

Office of THE IRON TRADE REVIEW,
First National Bank Bldg., June 9.

Pig Iron.—A quite satisfactory scattering run of orders has been placed during the week, and while business is quieter, the sales have continued and considerable inquiry is developing. A maker of agricultural implements is figuring on about 6,000 tons, 1,000 of which is for June, July and August; and 3,500 tons from June to December, and 1,600 tons of malleable from June to December. An Ohio manufacturer wants 2,000 tons for the third and fourth quarters. An eastern consumer is in the market for 3,000 tons. A Michigan melter inquires for 3,000 tons. All foundry iron. On southern iron, $12 Birmingham appears to be well maintained and two or three sales are reported in quantities from 500 to 1,000 tons at this price. The largest transaction was a sale of 20,000 tons to cast iron pipe makers; on this the price was not made public, but it was stated that it was a miscellaneous lot of iron on which the price would not serve as a basis for locating the market. A Kentucky consumer bought 2,000 tons of Bessemer and an Ohio manufacturer 6,000 tons of basic. It appears to be difficult to locate the prices on steel-making irons, but open quotations are $12.25 Birmingham for southern basic, and about $16 at northern furnace for Bessemer. These quotations appear to have been shaded, but to what extent was not given out. The market from the standpoint of southern furnaces shows continued strength. During the week several producers have withdrawn quotations and, while the price is almost uniformly $12 Birmingham for southern foundry iron, some producers are asking $12.50. It appears to be more difficult to sell southern iron in northern Ohio against competition from northern furnaces now than before the activity in the market began. Sellers of southern iron report that some producers in the north are more inclined to take business now. While the buying has not been heavy, the continued inquiry and miscellaneous order placing is on a scale which exceeds the expectations of the trade. Low grades are especially strong and we hear of sales of mottled and white iron at $10.50 Birmingham. There appears but little gray forge available. High silicon irons are stronger and the schedule of $18.50 at furnace for Jackson county 8 per cent is now securing orders. Northern iron is still selling in a limited way at $15 Ironton, although most of the producers in that district are maintaining $16 at furnace and piling iron. We quote for third quarter and prompt delivery delivered Cincinnati based on freight rates of $3.25 from Birmingham and $1.20 from Ironton as follows:

	PER TON
Southern foundry No. 1	$15.75 to 16.25
Southern foundry No. 2	15.25 to 15.75
Southern foundry No. 3	14.75 to 15.25
Southern foundry No. 4	14.25 to 14.75
Southern No. 1 soft	15.75 to 16.25
Southern No. 2 soft	15.25 to 15.75
Southern gray forge	13.75 to 14.00
Northern No. 1 foundry	16.70 to 17.70
Northern No. 2 foundry	16.20 to 17.20
Northern No. 3 foundry	15.70 to 16.70
Northern 8 per cent silicon	19.70 to 20.20

Coke.—More activity is noticeable in foundry coke and considerable contracting has been done covering six months' and twelve months' supply of foundry coke. There has been also a fair run of orders for spot foundry coke during the week, but business in furnace contracts is quiet. Prices in the Connellsville district for furnace coke are slightly firmer, as some of the low quotations recently in force have been withdrawn. Quotations in the leading coke producing districts are as follows:

	PER TON
Wise county furnace coke	$1.75 to 2.00
Wise county foundry coke	2.10 to 2.25
Pocahontas furnace coke	1.75 to 1.85
Pocahontas foundry coke	2.00 to 2.25
Connellsville furnace coke	1.75 to 1.90
Connellsville foundry coke	2.00 to 2.25

Finished Material.—Retail prices have not been reduced on bars in line with the announced reductions, as the stock on hand was purchased at the old schedule and the margin of profit is so small that local jobbers have not changed their selling prices. Retail orders are filled here at the following quotations:

Iron and steel bars, 1.85c to 2c, full extras. Angles, 3 x 3 and over, 2.10c to 2.25c; beams and channels, 15 inches and under, 2.10c to 2.25c; small angles and architectural channels, 2c base; plates, ¼-inch and heavier, 2c; 3/16-inch, 2.10c; No. 8, 2.15c; sheets (blue annealed) No. 10, 2.15c to 2.25c; No. 12, 2.20c to 2.30c; No. 14, 2.25c to 2.35c; No. 16, 2.35c to 2.45c; box annealed sheets, Nos. 18 and 20, 2.55c to 2.65c; Nos. 22 and 24, 2.65c to 2.75c; Nos. 25 and 26, 2.70c to 2.80c; No. 27, 2.75c to 2.85c, and No. 28, 2.85c to 2.95c; boiler tubes, 2¾ to 5 inches, 62 per cent off base; turnbuckles, 45 per cent off; rivets, 3c base; cold rolled shafting, 47 to 50 per cent off list; steel tire, 2.05c to 2.10c base.

Old Material.—The market is dull and has not responded to the activity in pig iron, quotations showing no material change as compared with a week ago. We quote dealers' selling prices here as follows:

Old No. 1 R. R. wrought, net tons	$11.00 to 12.00
Cast machine and fdy., net tons	12.00 to 12.50
Old iron rails, gross tons	13.50 to 14.00
Old steel rails (re-rolling) gross tons	12.75 to 13.25
Old short lengths, gross tons	12.00 to 12.50
Old iron axles, net tons	15.50 to 16.50
Heavy melting scrap, gross tons	12.00 to 12.50
Stove plate, net tons	9.50 to 10.50
Wrought turnings	5.00 to 6.00
Cast borings, net tons	4.00 to 4.50
Car wheels, gross tons	13.00 to 14.00

PHILADELPHIA.

Heavy Business in Pig Iron—Prices Firm.

Office of THE IRON TRADE REVIEW, 408 Central Trust Bldg., June 9.

Pig Iron.—The first week in June brought more orders to the furnaces than many of them had received in entire months since the depression began last October. One large house, representing a number of scattered furnaces, reports indeed that the week's business was greater than it had booked in any period of three months since that time. The orders were for all grades and in all sizes from a carload lot up to 2,000 and 3,000 tons. One estimate places the volume of business for the week at 50,000 tons for eastern Pennsylvania furnaces, but this is mere conjecture and is probably in excess of the amount. New England and surrounding territory seem to have bought more freely than the Philadelphia industries. Prices have been firmly maintained, and for the last quarter, concerning which many producers are reluctant to commit themselves, advances of 50 cents to $1 are asked beyond the prevailing prices, which are based on $16.75 a ton for No. 2X foundry. Southern irons are held at $12 Birmingham. While there has undoubtedly been a great change for the better and the feeling is much more hopeful than it has been for a long time, it must be remembered that there is still great room for betterment. Of the 17 furnaces controlled by the two largest merchant producers in eastern Pennsylvania but one is now in blast, and both prices and demand must improve considerably before there can be anything like a general resumption of activity. Prices show no changes, as follows:

No. 1X foundry	$17.25 to 17.75
No. 2X foundry	16.75 to 17.25
No. 2 plain	16.25 to 16.75
Standard gray forge	15.25 to 15.75
Basic	16.00 to 16.50
Low phosphorus	21.00 to 22.00
No. 2 Birmingham	15.50 to 16.25
No. 2 Virginia	16.75 to 17.25

Finished Material.—The reduction in the price of steel bars and shapes has had a somewhat disturbing effect on the finished material market, tending to keep buyers off until they learn whether the movement is likely to spread. In structural material and plates, no change in price has been made and the new business is light. Iron and steel bars are quoted lower, as follows: Structural material, 1.85c to 2c, according to specifications; steel plates, 1.85c to 1.90c; refined iron bars, 1.40c to 1.50c; steel bars, 1.50c to 1.60c.

Old Material.—The railroad lists which appeared last week were unusually heavy and seem to have had a somewhat quieting effect on the market. The Pennsylvania railroad offered 30,000 tons of steel rails, the accumulation of five months, at $16, and 4,000 tons of car wheels. The Reading also offered 7,000 tons of steel rails. There has been a small amount of general buying, but the mills are apparently waiting until the situation clears before making any extended purchases. An increase of 50 cents for heavy axle turnings is the only price change recorded, as follows:

Old steel rails	15.00 to 15.50
No. 1 steel scrap	13.50 to 14.00
Old steel axles	17.00 to 17.50
Old iron axles	19.50 to 20.00
Old iron rails	17.00 to 17.50
Old car wheels	13.50 to 14.00
Choice scrap R. R. No. 1 wrought	15.50 to 16.00
No. 1 yard scrap	13.00 to 13.50
Machinery scrap	13.50 to 14.00
Low Phosphorus scrap	17.50 to 18.00
Wrought iron pipe	11.50 to 12.00
No. 1 forge fire scrap	11.00 to 11.50
No. 2 forge fire scrap, ordinary	9.00 to 10.00
Wrought turnings	9.50 to 10.00
Axle turnings, heavy	11.00 to 11.50
Cast borings	9.00 to 9.50
Stove plates	11.00 to 11.50

BUFFALO.

Foundry Business Improves—Furnaces Conservative in Last Half.

Office of THE IRON TRADE REVIEW, 932 Ellicott Square, June 9.

Pig Iron.—Prices for prompt shipments remain about the same, with the furnaces showing a very conservative attitude on business for the second half. The tendency is toward an advance and no business is being taken by the larger interests for delivery after July 1 at the present prices. Both inquiries and orders continue to come in at an encouraging rate from nearly all lines, excepting the railway supplies interests, which are still dull. The local foundrymen report a steady booking of new business and one of the largest concerns, which has been practically closed down for several months, is preparing to make a substantial resumption on the strength of orders received and is only awaiting the arrival of patterns for the work booked. We quote for prompt shipment, f. o. b. Buffalo, as follows:

No. 1X foundry	$16.50 to 17.00
No. 2X foundry	16.00 to 16.50
No. 2 plain	15.50 to 16.00
No. 3 foundry	15.00 to 15.50
Malleable Bessemer	16.00 to 17.30
Gray forge	15.00 to 15.50
Charcoal	20.50 to 21.00

Finished Materials.—The cut in the prices of steel bars has resulted in the sale of an aggregate of about 7,000 tons in this territory. Other lines are very quiet.

Hamilton furnace of the Hanging Rock Iron Co., Hanging Rock, O., went into blast May 4.

ST. LOUIS.

Selling of Pig Iron Continues—Prices Are Firm.

June 8.

Pig Iron.—Selling of pig iron continues at about the same rate in the St. Louis territory as it has during the previous two weeks. A great deal of interest was manifested last week by foundrymen for carload lots for all deliveries, even into the first half of 1909.

The reduction in prices on several of the finished steel products had not affected the pig iron market here materially, and a determination to cling to the buying movement already started is apparent.

One of the largest steel foundries in the St. Louis territory purchased 5,000 tons of basic iron in addition to its reported purchases last week for shipment over the last three or four months of the present year. The price secured was much better than the same concern paid for previous purchases, One concern near St. Louis is in the market for 2,000 tons of foundry iron for shipment in equal portions over the last half of the year. Other inquiries were received for iron, running from several carloads to 1,000 tons. The other inquiry for 1,000 tons of iron, which was reported last week, has not been placed.

A price of $12, Birmingham, for No. 2 is recognized as rock bottom for shipment over the third and fourth quarter of the year. Most of the furnaces are asking 50 cents higher for deliveries over the last half of the year.

Our quotations, delivered, to which the freight of $3.75 a ton from Birmingham has been added, follow:

No. 1 southern	$16.25 to 16.75
No. 2 southern	15.75 to 16.25
No. 3 southern	15.25 to 15.75
No. 4 southern	14.75 to 15.25

Coke.—The coke situation from the seller's standpoint was a little bit better last week than it was during the week previous, although higher prices were not asked. A fair number of orders were received and booked, covering shipments over the next six months and one year. The price quoted in the St. Louis territory is firm at $2.15 to $2.50, ovens, for 72-hour Connellsville foundry coke, covering these deliveries; 48-hour Connellsville furnace coke, $1.75 ovens; Virginia and West Virginia, 72-hour select foundry coke, $2.25 to $2.75 ovens for future and immediate shipments; 48-hour furnace coke, $1.75 ovens. The freight rate on Connellsville, Virginia and West Virginia coke is $2.80 a ton to East St. Louis, $2.90 to St. Louis and $2.40 when destined beyond St. Louis.

Finished Material.—While quite a number of building projects are in the hands of St. Louis architects, everything as yet is on paper, and there was nothing in the situation last week that differed materially from what had been reported in one week prior.

Old Material.—The market remains dull and scrap iron men decline to make any changes in the St. Louis quotations as follows:

Cast iron borings, free from foreign material, net ton	$ 4.50
Steel axle turnings, net ton	8.00
Steel railroad axles, net ton	13.50 to 14.00
Iron railroad axles, net ton	15.50
Miscellaneous steel scrap, gross ton	10.25
Old car wheels, gross ton	14.00 to 14.50
No. 1 railroad cast scrap, net ton	11.00
Heavy machinery cast, net ton	12.00
Stove plate and light cast, net ton	10.00
Sheet iron, net ton, uncut	3.50
No. 1 railroad wrought, net ton	10.50 to 11.00
Railroad malleable, net ton	11.50
Heavy melting steel, net ton	10.00

BIRMINGHAM, ALA.

Ensley Steel Plant Will Soon Be in Full Operation.

June 8.

The spurt in the iron market in the southern territory was a healthy one. and while it was at its height many thousand tons of the product were disposed of. It is stated that the order books were well filled for delivery during the third quarter of the year and even for a longer period. So strong was the business that the blowing in of furnaces just as soon as they can be gotten ready is warranted and is being done. The Tennessee Coal, Iron & Railroad Co. has blown in three furnaces on basic iron and two will be making foundry iron before the end of the week. Other furnaces in this territory are being gotten ready and as soon as possible they will be started up.

While the greater portion of the iron sold during the past three weeks went out at $11.50 and under, the quotations have been strengthened and manufacturers are not hunting any business under $12 per ton, No. 2 foundry, and are asking $12.50 per ton, with some small lots sales being made, immediate delivery.

Much of the iron that has been sold recently is for speculative purposes, beyond all doubt. There have been some sales made for actual consumption, however, and inquiries are now being made by consumers.

There is great activity noticed among the varied interests of the Tennessee Coal, Iron & Railroad Co. preparations being made for the general resumption of operations in this district. The open-hearth furnaces in the big steel plant at Ensley, near Birmingham, will start up the first of this week, to be followed by other departments in the big plant until the entire mill will be on. It is believed that not under 90 per cent of the old labor will be ready when the announcement is given for operations to start.

BRITISH IRON NOTES.

Slight Improvement in Pig Iron is Noted.

Office of THE IRON TRADE REVIEW,
Prince's Chambers, Corporation St.,
Birmingham, Eng., May 30.

The more cheerful reports from America concerning pig iron have not yet found their parallel in this country, although a slight improvement is apparent. The breakdown of the Cleveland "corner" has had a wholesome effect in restoring a sound condition of the market, the general impression being that prices now fairly reflect the true state of affairs. Certain consumers who would not touch business with a pair of tongs, while the squeeze was on, are now coming forward to buy. The most wholesome sign is the close approximation of current prices with those for forward business. Yesterday, for example, cash buyers were 50s 2d ($12.28), and three months buyers 49s 11d ($12.22). The stocks at Middlesbrough have again begun to deplete, and now stand at 68,000 tons, bringing the total increase on the month to only 811 tons. The market may be said generally to have changed slightly for the better. The exports for the present month have been 101,808 tons or almost exactly the amount of a month ago. It is remarkable that while there is slightly more animation in the north of England, and everywhere a more hopeful feeling, there was a further reduction on the Birmingham market on Thursday, Northampton and Staffordshire cinder pig each selling at 45s ($11.2), which is much below previous figures, and only about 6 shillings above the lowest figures ever recorded. The explanation is that smelters have at last become really hard up for orders, and are prepared to have them at almost any price. At the same time, everyone recognizes that the market is most sensitive, and very little improvement will be necessary to give a strong upward impulse to all descriptions of iron. The inability to

increase accumulation at Middlesbrough is highly significant. The resumption of ship building operations has somewhat strengthened the hematite market, and on the east coast mixed numbers are well able to maintain the recent figure of 57s 6d ($14.8).

METAL MARKET

NEW YORK.

June 9.

Copper.—The market has not gained in strength during the past week and selling prices are slightly lower, with current transactions extremely light. Europe is taking very little and domestic manufacturers are buying sparingly. We quote: Lake, 12⅞c to 13c; electrolytic, 12¾c to 12⅞c; casting, 12½c to 12⅝c.

Pig Tin.—The market has fluctuated within moderate limits during the week, chiefly in sympathy with a manipulated movement abroad. We quote the present market at 28c to 28½c.

Pig Lead.—There is a better demand and the improvement noted a week ago continues. The London market is also stronger. We quote 4.45c to 4.50c, New York.

Spelter.—More liberal buying has brought some advance to the spelter market and current sales are now on the level of 4.60c to 4.65c, New York.

Antimony.—The demand is unchanged and quotations are about the same: Cookson's, 8¾c to 9c; Hallet's, 8½c to 8¾c; ordinary brands, 8¼c to 8⅜c.

CHICAGO.

June 9.

A steadily improving situation has been noticeable in the metal market for a few weeks past in which the character of the orders brings considerable encouragement. Prices are firm as quoted and lead has registered a decided advance. We quote minimum prices for less than carload lots.

Lake copper, 13½c to 14c; casting, 13¼c to 13½c; pig tin, 32c to 32½c; spelter, 5.10c to 5.25c; pig lead, desilverized, 4.60c to 4.75c in 50-ton lots; corroding, 4.75c to 4.85c in 50-ton lots; car lots, 2½c per 100 pounds higher; sheet zinc, 7c list, f. o. b. LaSalle, in car lots of 600-pound casks; Cookson's antimony, 11c to 11½c; other grades, 10c to 10½c.

There have been no changes worthy of note in old metals and prices are unchanged. We quote prices to dealers as follows:

Copper wire, 10½c; heavy copper, 10½c; light copper, 9½c; heavy red brass, 10c; heavy yellow brass, 8c; light brass, 5½c; No. 1 red brass borings, 8½c; No. 1 yellow brass borings, 7½c; brass clippings, 8c; tea lead, 3¼c; lead scrap, 3½c; zinc, 3¼c; tin pipe, 25c; tin foil, 22c; pewter, 17c; electrotype plates, free from wood, 4c; electrotype dross, 2¼c; stereotype plates, 4½c; stereotype dross, 3c; prime slab zinc, $62 per ton.

ST. LOUIS.

June 8.

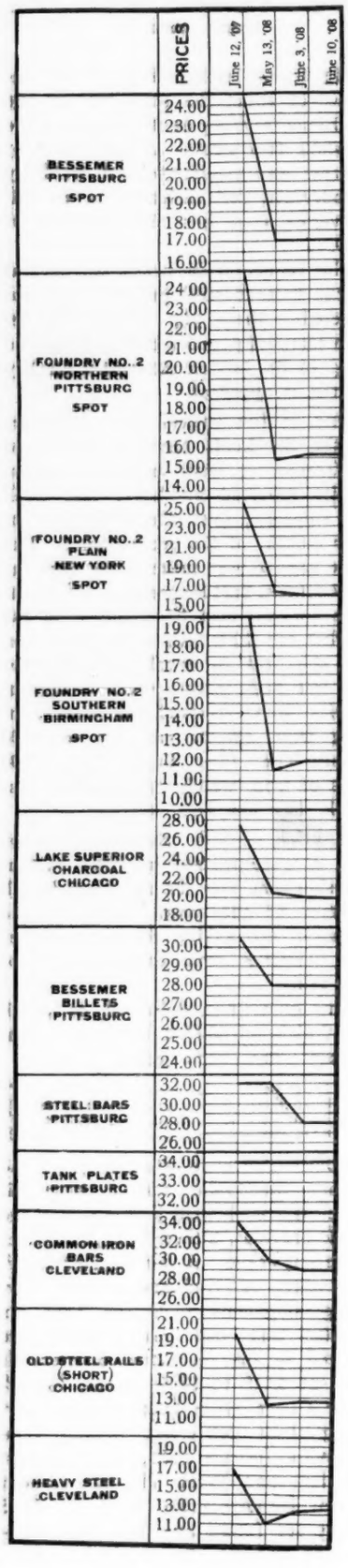
Lead and Zinc.—Zinc ore touched the lowest price last week that had been paid in the Joplin district for many weeks, $37 a ton with an average assay base of $31 to $34 a ton prevailing for 60 per cent ores. Lead advanced, however, reaching $61.50 a ton with frequent rumors of still higher prices. A considerable number of non-producing lead mines were shut down Saturday night because the owners preferred to wait for higher quotations. A manifestation of buyers to contract for 10,000 tons for export shipment, together with the closing of certain mines, is expected to produce a favorable reaction in the prices of zinc ore.

The shipments in pounds and their values from the Missouri-Kansas district last week were as follows: Zinc, 8,736,360 pounds; value, $141,843. Lead, 2,408,840 pounds; value, $70,960.

Will Enlarge Furnace.—The St. Louis Blast Furnace Co., an auxiliary of the DeCamp Bros. & Yule Iron, Coal & Coke Co. of St. Louis, has decided to issue bonds to the extent of $300,000 to be used as collateral for funds to place the furnace on a larger scale of operations when it begins work next week. On April 21 the company voted to increase its capital stock from $200,000 to $300,000, to be divided among the stockholders as a stock dividend. A deed of trust for $300,000 has been placed upon a number of parcels of ground belonging to the furnace company in South St. Louis, with the St. Louis Union Trust Co. as trustee for bondholders, bearing 5 per cent per annum, and running 20 years.

New incorporations formed in the eastern states, with a capital of $1,000,000 or more during May, according to the *New York Commercial*, show an aggregated capital stock of $110,825,000, as compared with $63,500,000 in April and $76,200,000 in May of last year. Last month's records show a larger total than any month since July, 1907, when the combined capital of new incorporations reached over $200,000,000.

PRICE CHART.



DEATH OF PETER WHITE.

The Honorable Peter White, closely identified with the discovery and development of the iron ore regions about Marquette, Mich., died unexpectedly June 6, at Detroit. He was attending a meeting of the Mackinac Island Park Commission, of which he was president for 12 years. When leaving the city hall, he suddenly sank to the ground and expired, death being due to heart trouble.

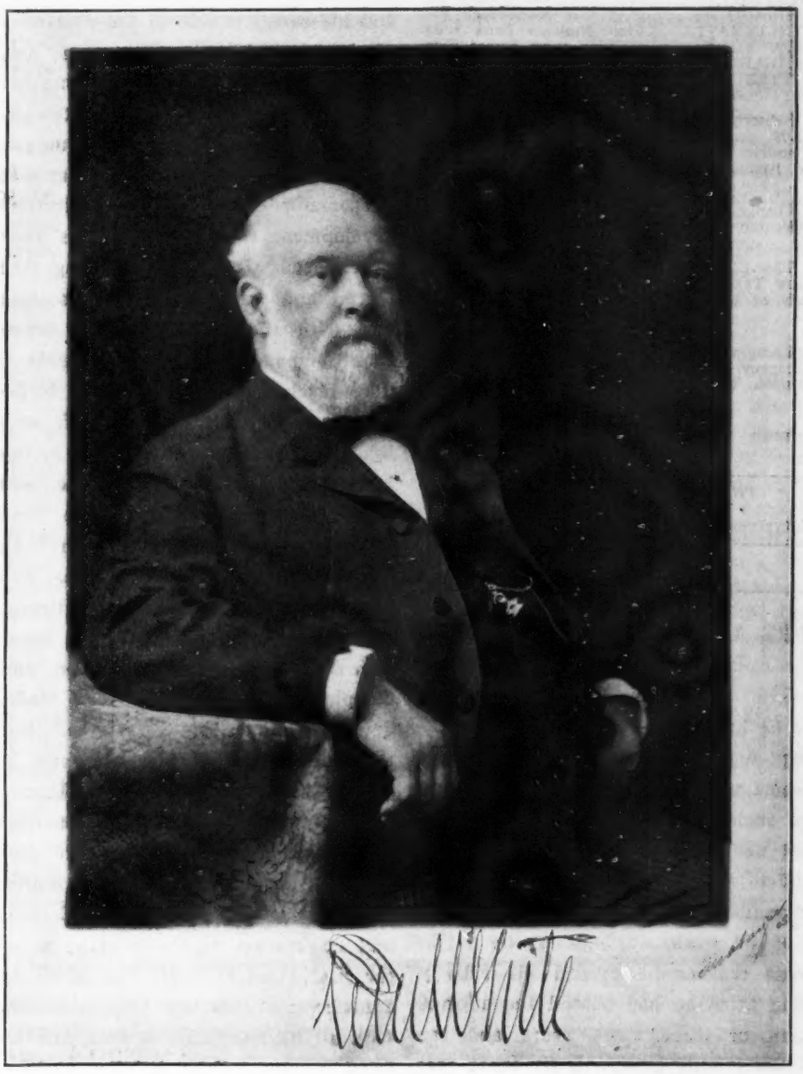
Peter White was born in Rome, N. Y., Oct. 31, 1830. When he had reached the age of nine years, his parents removed to Green Bay, Wis. At 15 years the copper excitement, then prevailing, drew him to Mackinac Island, where he spent two years. In 1847 he sailed on the schooner Bela Hubbard on several trips between Detroit and Sault Ste. Marie, until the schooner capsized off Thunder Bay Island. At Detroit, later, he obtained employment as a clerk in the store, and remained for a year. He then obtained employment at the building of the crib on Waugashance Reef, and in the winter time served as a clerk in a store.

His life work began when Robert J. Graveraet appeared at Mackinaw Island in search of men to develop the iron mines which had just been discovered upon the Marquette range. The party, consisting of nine men and the boy Peter White went to develop a mine on the site of the present town of Ishpeming. With this mine and the company that subsequently proved its title to it, the Cleveland Iron Mining Co., now known as the Cleveland-Cliffs Iron Co., Peter White was identified all his lifetime. White's first job at the mine was driving a horse. He wrote the bill of lading of one of the earliest shipments of ore—six barrels—consigned to B. L. Webb, Detroit, on July 7, 1852. This bill of lading has been preserved by Oglebay, Norton & Co., of Cleveland.

Peter White was by instinct a merchant and after having served as a clerk in a store he entered into the general merchandise business for himself. He conducted it with profit, but sold out when he saw a better opening in the insurance business. He later began the business of banking in a small way, finally incorporating his institution into the First National Bank of Marquette. On Sept. 29, 1857, he married Ellen S. Hewitt, daughter of Dr. Morgan L. Hewitt, of Cleveland, the first president of the Cleveland Iron Mining Co.

It was in 1857 that the land grant was transferred from Sault Ste. Marie to Marquette and Peter White was made register. A little later, he added to his duties that of collector of customs of the port of Marquette. He undertook the study of law, studying alone in the evenings, and the United States supreme court later admitted him into practice. He formed the law firm of White & Maynard, but eventually surrendered the entire business to his partner.

When the civil war was drawing to a close, Mr. White was among the few who perceived the immense demand for iron that would follow. He purchased all the pig iron that he could possibly carry and sold it a few months later at great profit,



winning a comfortable fortune in this single transaction. From that time on, as banker and insurance agent, he steadily prospered.

Peter White was a member of the Michigan house in 1857 and of the state senate in 1875, on both occasions being sent to defend the interests of the upper peninsula in railways and other important legislation. Four years after the town of Marquette was incorporated, he was unanimously elected mayor, but this office he declined.

His most distinguished service to Marquette was the conversion of Presque Isle into a park. There is scarcely a thing about Marquette that does not show the handiwork of Peter White. He served as president of the Sault Ste. Marie Semi-Centennial Commission three years ago.

Steel Foundries' Showing.—Considerable improvement in the operation of the American Steel Foundries and subsidiary companies was noted in the report for the nine months ending April 30, submitted to shareholders in Jersey City recently. The net earnings amounted to $709,457.20, while other income involved $59,082.16, making a total income of $764,539.36. From the total income there is deducted $174,225 for bond interest; $78,750 for sinking found for 10-30 year bonds, and $167,250 for depreciation, leaving a net income of $344,314.36.

D. B. Meacham, of Rogers, Brown & Co., Cincinnati, will sail for Europe this week.

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June 11, 1908.

THE USEFUL LIFE OF PETER WHITE.

The Honorable Peter White died as he had lived—in the harness, working unceasingly to the end. There seems much that is sad and shocking in such swift overtaking by death; but nevertheless it was the inevitable end of Peter White. His activity was incredible. Work was life with him. Not to work was not to live. To what reaches he carried his activity long after he had passed the allotted span of three score years and ten is not readily believable by those that did not know him. He worked early and late, and midnight frequently found him writing busily at his desk. This habit of industry was lifelong. It marked every step of his progress through the world.

The life of Peter White is an inspiration. He had none of the so-called advantages of early training. Such advantages as he possessed nature gave to him. Whatever he got he won through his own efforts unaided. He left home at the age of 15 years and made his living out of a comparative wilderness. That he should also out of that same environment acquire a refinement, culture and breadth of knowledge that was notable among men, was a more distinct achievement than the winning of a fortune.

Peter White was an unusual man and his career is one of the romances of American history, picturesque and uplifting. He was a prince among his fellows. His position in contemporaneous history is unique. It is unique because he was both a participant and a spectator of the greatest industrial development that the world has ever experienced. It is not surprising that legend and tradition should associate him with the upper peninsula since time immemorial. While he would not have reached his seventy-eighth birthday until October next, his life embraced all that was commercial in the history of Lake Superior. He was there when that mighty lake bore nothing greater than the birch bark canoe of the Indians, and all that has happened since, the building of towns, the network of railways, the great fleet of ships and all the vast and complex machinery of the iron trade, developed under his very eyes. But the potentiality of what he saw is greater still. It has lifted the United States to the pinnacle of commercial supremacy and has made it the premier iron-making country of the world. As he exclaimed at the Semi-Centennial celebration of the completion of the first canal at Sault Ste. Marie to commerce: "This vast land-locked sea with all its tributaries is free, and its freedom means these infinite results—the greatest addition to freedom since freedom came. And we who have seen its development and have worked the forests and mines, which have chiefly made its commerce, may pause in wonder that so few and feeble a people living under so cold a sky should have been permitted to share so largely in changing the seat of empire and enlarging the happiness of the world."

The upper peninsula of Michigan came to be known in common speech as "Peter White's Country." In fact, the history of the peninsula is the history of Peter White. He stamped his personality indelibly upon its rugged surface. He identified himself thoroughly with every department of it and he did more for it than any American has ever done for so large a section of a state. He worked for it unceasingly. In fact, after his business affairs had become so soundly established as to require his time merely in an advisory capacity, he labored incessantly for the development of the upper peninsula, socially and politically. At a time of life when most men would be inclined to take their ease by the fireside, he thought nothing of journeying thousands of miles in behalf of some public enterprise. It was through his efforts alone that congress three years ago took steps to observe the Semi-Centennial of the Sault Ste. Marie canal. He spent many strenuous weeks between Marquette and Washington on this single mission. His whole life, in fact, was marked by public efforts equally as devoted and as unselfish.

The late Dr. W. H. Drummond, the Canadian poet, writing of him at the dedication of the Peter White Hall of Science at Marquette, said: "Strong in his gentleness, wise in his simplicity, practical in his enthusiasm, a pioneer in an age of pioneers, the man whom children on the street know only as Peter White, stands today, it seems to me, the very highest ideal of that civilization of which the American people are so proud. When such men build us foundations, easy it is to raise the superstructure, and the trail Peter White has cut through life is blessed by acts of private charity and deeds of public devotion that will serve as a guide to those who follow in the footsteps of a truly great, and above all, good man."

Don N. Dickinson suggested a few years ago that a monument should be placed at the entrance of Presque Isle Park, where it would be seen by all men entering upon that beautiful spot, a colossal bronze statue of Peter White. "Let us have the sturdy figure," said he, "upon the sturdy legs,

with the kindly face in colossal bronze at the entrance of the park."

This it seems to us is the least that Marquette can do for the man that felled the first tree upon its site and who had been its lifelong benefactor, identifying himself with every phase of its civic life, founding hospitals, bequeathing libraries and maintaining parks.

No man had a wider acquaintanceship that Peter White; and no man has lived a busier and a better life. He gave freely of his fortune and of himself to every worthy enterprise. He had naturally developed along generous lines. He was a citizen of the world and wherever he was placed, he was at ease and at home.

DEAN KENT DISMISSED.

The trouble at Syracuse University between Chancellor Day and Dean Kent arising from the latter's demand that the L. C. Smith College of Applied Science be rendered safe for its occupants in case of fire has resulted in the latter's dismissal by the board of trustees on June 4. His resignation was demanded by the chancellor on April 17, but was refused, and the dean appealed to the board of trustees for a hearing, and the specification of the charges against him. No notice was taken of his appeal and his dismissal followed.

This action was in the face of protests from the entire student body and alumni of the College of Applied Science, and numerous protests from engineers and the public generally, all of whom approved of the stand taken by Dean Kent. The students were forced by Chancellor Day to retract their protest under penalty of dismissal, some of the senior students actually being suspended. As a mark of their respect and confidence in him, the senior class, at the annual reception tendered them by Dr. Kent, on June 2, presented him a silver loving cup. There is something of a mystery in the proceedings which have resulted in the dismissal of Dr. Kent. The chancellor has steadfastly refused to give his reasons for demanding Dr. Kent's resignation. The demand followed immediately on the appeal of Dr. Kent to the city authorities for an inspection of his building, after the Collinwood fire, as related in THE IRON TRADE REVIEW of May 7, and to this the chancellor's action was ascribed by the Syracuse papers. The chancellor never denied this, but entered into a spirited controversy regarding the safety of the building. He was finally overwhelmed by the weight of evidence, which proved conclusively that the building was a fire trap of the worst kind and a menace to the lives of all its occupants. Thereafter, he maintained silence, and refused to give any reasons for his desire for the removal of Dr. Kent.

William Kent, the deposed dean, is one of the best known mechanical engineers in the United States. He was born in Philadelphia in 1851. He graduated from the Central High School of that city in 1868. After serving in various capacities at the blast furnace at Ringwood, N. J., and in the Jersey City Gas Co., he entered Stevens Institute, receiving the degree of mechanical engineer in 1876. In 1906 he was given the degree of doctor of science by Syracuse University. For a number of years he was editor of the *American Manufacturer* in Pittsburg. Leaving the newspaper business, he entered the Schoenberger works at Pittsburg, rising to the position of superintendent, which position he resigned after an attack of typhoid fever. He then became connected with the Babcock & Wilcox Boiler Co., acting as engineer of tests and general sales manager. Leaving the boiler company, Mr. Kent built the factory for and acted as general manager of the Springer Torsion Balance Scale Co. of Jersey City until early in the 90's, when he commenced practicing as consulting engineer in New York. In 1895, he became associate editor of *Engineering News* in conjunction with his consulting work. This position he held until he became dean at Syracuse University, in 1903.

Dr. Kent is an author of note, his "Mechanical Engineers' Pocketbook" being the standard work on mechanical engineering in the English language. He is also the author of "Steam Boiler Economy," "Tests of Chain Cables" and "Strength of Materials," besides numerous contributions to scientific and technical societies. Dr. Kent in 1898 served on the New Jersey commission on the pollution of streams. He is a member of the American Society of Mechanical Engineers, the American Institute of Mining Engineers, American Society for Testing Materials, American Society for the Promotion of Engineering Education, the Technology Club of Syracuse, Syracuse Chamber of Commerce, and the Engineers' Club of New York.

MUST PAY DAMAGES.

Canadian Judge Assesses Striking Plumbers $2,000 and Enjoins Them.

Toronto, Can., June 5.—Judge Mathers, of Winnipeg, has given his decision in a suit for damages brought by the Master Plumbers' Asociation against the Plumbers' Union of that city, involving the question of the right of picketing during a strike. The union was also charged with inducing men engaged to take the places of strikers to break their contracts. The decision was in favor of the masters' association, and awarded damages to the amount of $2,000 against the union and some individual members. The judge also issued a perpetual injunction against picketing and interference with men at work. The suit has been before the courts ever since the strike which occurred two years ago.

Forty-five union molders went out on strike at the Moffatt Stove Co.'s works, Weston, Ont., a few days since, the company having announced its intention of running an open shop. The men claim that it is a lockout, that the company has repudiated an agreement made with the union, which was to have run until May 1 next. In addition to abolishing the closed shop, the company has done away with the bonus system, thereby reducing wages.

The Dominion Pressed Steel Co., Port Elgin, Ont., has assigned to E. R. C. Clarkson, Toronto, with assets estimated at $30,000 and liabilities of about $20,000. The plant has been closed down for some time while the directors have been endeavoring to secure more capital in which they were unsuccessful.

The output of pig iron for May at the blast furnaces of the Nova Scotia Steel & Coal Co. was 6,064 tons, being the largest for any month in the history of the company.

Employes Volunteer.—An explosion of dynamite, wrecking a 20-ton steel crane at the plant of the Van Dorn Iron Works, Cleveland, on the night of June 2, entailed a loss of $25,000. The next day employes of the company passed resolutions offering to patrol the property of the company with loaded shotguns to prevent a repetition of the outrage.

At the annual meeting of the stockholders of the Amalgamated Copper Co., recently, the report for the year ending April 30 compared with the previous year shows a surplus after paying dividends of $525,041, a decrease of $1,703,047.

PRODUCTION OF STEEL MAKING IRON DECLINES

As foreshadowed in our uncompleted blast furnace returns for May, published June 4, there was small change in the size of the pig iron production as compared with that of April. The total production of coke and anthracite fuel pig iron produced in May was 1,168,002 tons, compared with 1,155,122 tons in April, an increase of 12,880 tons in favor of May, which had one more working day. The merchant furnaces in May averaged a daily production of 12,498 tons, compared with a daily average in April of 11,797 tons. The actual increase in merchant iron production made in May over that of April was 33,536 tons. On the other hand, the production of steel making stacks in May fell off 28,228 tons as compared with April. These non-merchant stacks showed a daily average in April of 26,295 tons, which fell away in May to a daily average of 24,537 tons. In other words, the daily production of all makes of pig iron for April was 38,504 tons, which declined in May to 37,677 tons, while the total number of blast furnaces in operation on the last day of the month, 146, was exactly the same as that for April.

The following table gives the total pig iron production of the country by months for the five months of 1908, in comparison with the total production for the corresponding five months in 1907:

	Tons, 1908.	Tons, 1907.
January	1,081,813	2,194,801
February	1,086,809	2,047,036
March	1,229,856	2.216.709
April	1,155,122	2,226,708
May	1,168,002	2,291,030
Total	5,721,602	10,976,284

The production for the first five months of 1908 compared with the corresponding five months in 1907 fell off a total of 5,254,682 tons, or 47.9 per cent. It is interesting to compare with the low point of 1908 the high point production of 1907. The 1907 production reached its high point in October, with 2,359,690 tons, which then declined by leaps and bounds until it touched the low point in January, 1908, when the total production reached 1,081,813 tons, a loss of 54.1 per cent compared with the October output.

In January, the merchant furnace production was 390.533 tons or 60.9 per cent of that of January, 1907; the non-merchant production was 1,481,247 tons or 42.8 per cent compared with the same month in 1907.

In February of this year, the merchant furnace production reached its low point, 323,740 tons, even making allowance for the shorter working month of February, and showed a production of 57.4 per cent, compared with February, 1907; the non-merchant production, however, in February showed a considerable increase over January, being 1,483,028 tons, but was still only 50.8 per cent of the February production of a year ago.

In March, 1908, the production of merchant iron again increased to 367,530 tons, which was 58.7 per cent of the production in the same month last year; the non-merchant furnaces in March this year showed a larger production than in February, being 1,560,963 tons, and yet that was only 54.1 per cent of that of March a year ago.

In April this year, merchant production declined to 353,901 tons, or 50.4 per cent of the merchant production in the same month last year; non-merchant furnace production fell off slightly to 1,489,949 tons, being 52.9 per cent of that for the same month last year.

The merchant production for May this year, 387,437 tons, increased 33,536 tons over that of the preceding April, and was but 50.1 per cent of the production in May last year. On the other hand, in May this year, the non-merchant furnace production, 760,633 tons, declined 28,288 tons, as compared with the April production this year, and was but 51.1 per cent of the May non-merchant furnace production last year.

Official and unofficial reports show that at least half a dozen merchant stacks, in addition to those in blast in May, have been or will be blown in in June, and at least three steel making stacks, which presages a larger production for June than for May.

MAY FURNACE REPORT.

STATES—	NO. OF STACKS.	NO. IN BLAST ON LAST DAY OF MONTH. MAY.	NO. IN BLAST ON LAST DAY OF MONTH. APRIL.	PERCENTAGE OF TOTAL POSSIBLE OUTPUT MADE.	AV. DAILY CAPACITY IN BLAST LAST DAY OF MONTH.	ACTUAL TONNAGE MADE. MERCHANT.	ACTUAL TONNAGE MADE. NON-MERCHANT.	TOTALS. MAY.	TOTALS. APRIL.
Pennsylvania	153	54	57	35.2	15,401	99,073	368,019	467,092	485,942
Ohio	62	26	24	38.3	8,039	63,263	162,181	225,444	216,838
Alabama	45	17	15	36.8	3,375	101,863	———	101,863	94,769
Virginia	24	8	8	31.6	819	25,526	———	25,526	26,500
New York	24	8	8	32.6	2,129	33,025	31,653	64,678	62,263
New Jersey	9	2	4	37.9	394	20,890	———	20,890	22,701
Illinois	24	14	13	55.3	5,249	7,600	141,541	149,141	140,800
Tennessee	18	7	7						
West Virginia	4	1	1	30.0	1,012	24,100	6,237	30,337	27,749
Kentucky	7	1	1						
Maryland	4	2	2						
Wisconsin	6	1	1						
Colorado	6	3	3	41.2	1,898	4,262	51,002	55,264	61,202
Indiana	1	1	1						
Georgia	2	0	0						
Texas	3	0	0						
Minnesota	1	0	0	11.1	253	7,835	———	7,835	3,998
Michigan	2	1	1						
Missouri	1	0	0						
Spiegel—All states								14,431	6,495
Ferro—All states								5,501	5,865
Totals	396	146	146	——	38,569	387,437	760,633	1,168,002	1,155,122

Receivers Appointed.—Joseph R. Foard, Arthur G. Wellington and Howard Carlton have been appointed primary receivers of the South Baltimore Steel Car & Fdy. Co. at Curtis Bay, Md. The receivership came as the result of an action brought by the Maryland Car Wheel Works to recover a draft of about $5,500. The embarrassed company is said to have assets more than $1,000,000 in excess of liabilities, but has been unable to raise funds during the recent depression.

Rossiter, MacGovern & Co., a corporation dealing in machinery, with offices at 90 West street, New York City, has made a settlement with creditors at 25 cents on the dollar, payable 15 cents in cash and 10 cents in notes. Liabilities were about $67,750 and assets $24,000.

The annual meeting of the United States Cast Iron Pipe & Foundry Co. will be held June 24.

HEARTY GREETING

EXTENDED AMERICAN FOUNDRYMEN'S ASSOCIATION.

One Thousand Members and Guests in Attendance—Plan to Promote Unity of the Various Affiliated Organizations.

(Special Telegram.)

Toronto, Ont., June 9.—Nearly 1,000 members and guests of the American Foundrymen's Association had registered their names before the gavel of President Stanley G. Flagg Jr. announced the opening of the twelfth annual convention. Municipal Toronto and Canadians in general have given the association and its affiliated organizations a generous welcome as an evidence of their appreciation for the selection of this beautiful Canadian city as the meeting place for this year's convention. The exhibition of foundry equipment and supplies, as well as the meetings of the convention, is being held in the Toronto fair grounds, the spacious buildings of which are admirably suited for their present use. A commendable feature of this year's convention, the more striking because of its entire absence at all previous meetings, was the completed state of all the exhibits before the convention was officially declared open, a result which was due in large measure to the courtesy of the local entertainment committee and city officials in placing at the disposal of the exhibitors several weeks in advance of the date of the convention the buildings at the fair grounds. Another feature worthy of passing praise is the selection of a detached building in which to hold the business sessions. The reading of papers and discussions thereon will not be disturbed this year by the roar and noise resulting from the operation of machinery and the confused din of hundreds of tongues which have marred all previous conventions.

Opening Session.

The opening session was held Tuesday afternon at 2 p. m., Mayor Oliver of Toronto delivering the address of welcome. Responses were made by President Flagg for the American Foundrymen's Association; Charles J. Caley for the Brass Founders' section, E. H. Mumford for the Supply Men, and W. S. McQuillen for the Foundry Foremen. In happy phrases Mayor Oliver expressed the gratification of himself and city for the privilege of being host to the several organizations represented, and hoped that their visit here would result in freer business and social intercourse between the two nations. He dwelt on the business possibilities to Americans in Canadian expansion and hoped that the interest of his people in the American exhibits would induce many of the American manufacturers to establish branch factories in Toronto for the production of their product.

President Flagg's opening address was devoted to a review of the development of the American Foundrymen's Association and its labors in the years of its existence. While giving every praise for the good accomplished, the results of which had been of incalculable benefit to the foundry trade all over the world, he said that still further strides would have to be taken, not dreamed of when the organization was founded, to justify its existence and claim the continued attention of scientific men. To maintain the pace that had been set and accomplish the definite results expected of the association, more money than had hitherto been paid into the treasury of the organization would be required, and he put forth, as a matter for consideration at this meeting, the advisability of increasing the membership dues to provide these funds. He thought metallurgy and the more scientific side of foundry operations should be given greater attention in the future than had been allotted them in the past, and in this connection he deplored the lack of interest and assistance given by chemists and metallurgists to the work in hand.

Dr. Moldenke's Report.

Dr. Moldenke followed Mr. Flagg with his report as secretary and treasurer. The total income for the year, including balance carried over from the last meeting, was $2,816. Deducting all expenditures, left a balance of $325.22 in the treasury at the present time. The special fund collected during the year amounting to $585 was increased at this session by a contribution of $300 from the Pittsburg Foundrymen's Association, which was handed to the treasurer at the close of his report by Mr. Sleeth. To make the work of the American Foundrymen's Association more effective and to secure a greater unity of action among the allied organizations, a plan has been proposed whereby the affairs of the various societies will be centrally managed and yet each association will retain its identity. This would mean the publication of all proceedings and contributions in one journal, thereby preserving much valuable literature which at the present time only indiscriminately finds its way into print. The plan was tentatively outlined by Dr. Richard Moldenke at the annual meeting of the Associated Foundry Foremen, Monday evening, and it was likewise discussed by the executive committee of the American Brass Founders' Association. The Foundry Foremen appointed a committee to consider the proposition and this body will be empowered to act with the other organizations during the year.

Foundry Foremen.

The annual meeting of the Associated Foundry Foremen was held on Monday evening and F. C. Everitt, secretary, reported a growth in membership of more than 100. Officers for the ensuing year were elected as follows: W. S. McQuillen, Warren, Pa., president; H. J. Holmes, Cincinnati, first vice president; J. Gaffney, Montreal, second vice president; C. E. Hoyt, Chicago, secretary and treasurer.

F. C. Everitt, to whose untiring efforts and indefatigable energy the growth of the association is largely due, insisted upon the acceptance of his resignation as secretary.

NEW RYERSON OFFICES AND WAREHOUSES.

Joseph T. Ryerson & Son, general offices and warehouses at Chicago, announce that they have completed the new general offices and warehouses at Sixteenth and Rockwell streets, where they will be pleased to receive callers who desire to inspect the increased facilities which the new location affords. The company discontinued the Milwaukee avenue and Lake street offices June 1. Down town branch offices will be maintained at the Commercial National Bank building. The company has established an hourly automobile service between the general and branch offices. The automobile will arrive at the Commercial National Bank building, Clark and Adams streets, on the even hours, beginning at 8:00 o'clock each morning. The trip required is less than 15 minutes by way of Jackson, Ashland and Twelfth street boulevards.

The audit of the Barney & Smith Car Co., recently submitted at the annual meeting, showed that the profits for the fiscal year ending March 31, last, were $508,639. After charging bond interest and dividends, the balance was transferred to the undivided profits accounts, which on April 1, 1908, showed a credit balance of $474,163.

OBITUARIES.

John R. Johnson, head of the Johnson Forge Co., Wilmington, Del., and of John R. Johnson & Co., Richmond, Va., died June 4 at his home in Philadelphia after an illness of 10 weeks. He was about 69 years old.

Julius G. Wagner, founder of the J. G. Wagner Co., now a part of the American Bridge Co., Milwaukee, died May 31 at his home in Milwaukee, aged 74 years. He had lived in Milwaukee since 1855, and was a pioneer in the manufacture of iron and steel there.

Herman E. Schnabel, pioneer barb wire fence manufacturer, shot himself dead in his room at Chicago, June 2. He invented several labor saving devices for the manufacture of barbed wire, and formed the Schnabel Wire Co., of which he was head, and later the sole owner. When the American Steel & Wire Co. was formed. the Schnabel concern was included in the list, all the factories of the company afterward using the Schnabel devices.

Silas J. Williams, Alliance, O., died June 1, at West Harwich, Mass., aged 65 years. He went to Massachusetts about a month ago in search of health. Mr. Williams was largely interested in the Alliance Steel Casting Co., now a part of the American Steel Foundries. Years ago he was a member of the Ohio state senate, and for a number of years was a member of the board of trustees of Mt. Union College, Alliance.

Caleb B. Wick died June 3 at his home in Youngstown, O., aged 72 years, after many months of illness. He was born April 24, 1836, his parents being early settlers in Youngstown. At the age of 17 he began his business career as clerk in the old Mahoning County Bank. Through founding a bank in Sharon, Pa., he became interested in the iron and steel manufacturing business with the late Peter L. Kimberly. As a partner in the firm of Wick, Ridgeway & Co., he was a pioneer in the early rolling of iron railroad rails, doing a profitable business until the introduction of steel into rail manufacturing. The old Wick, Ridgeway Co. mill is now a part of the Mahoning valley plant of the Republic Iron & Steel Co., at Youngstown. He was also interested in the development of the bituminous coal industry in both Pennsylvania and Ohio, and was one of the pioneer projectors of the P. Y. & A. railroad,

PERSONALS.

Charles M. Schwab, in company with Archibald Johnson, of the Bethlehem Steel Co., sailed for Europe on Tuesday on the Kron Prinzessin Cecilie.

W. S. Boyd, purchasing agent of the Page Woven Wire Fence Co., Monessen, Pa., has resigned and has become connected with the Pittsburg Steel Co. in the capacity of assistant purchasing agent. D. S. Muckley has been made purchasing agent of the Page company.

W. A. Evans has been appointed manager of the Aero Pulverizer Co., with offices at 90 West street, New York City. He succeeds E. G. Thomas, who has resigned to devote his attention to a belt conveying system and other lines in which he is personally interested.

Dr. Daniel Carhart, dean of the engineering school and professor of civil engineering of the Western University of Pennsylvania, Pittsburg, has resigned after 26 years of service with that institution. Dr. Carhart has been made a beneficiary under the Carnegie pension fund. Dr. A. E. Frost will assume the duties of dean.

JONES & LAUGHLIN STEEL CO. BANQUET.

On Saturday, June 6, about 50 of the various department superintendents and foremen of the coke ovens and blast furnaces of the Jones & Laughlin Steel Co., met at a most enjoyable banquet for the purpose of promoting good fellowship and harmony among all the employes of these works of the steel company.

The banquet was served in the Hotel Henry and toasts were responded to by employes and guests, who were introduced by E. L. Messler, general superintendent of coke oven and blast furnace departments, who acted as toastmaster.

Among the guests who responded were B. F. Jones Jr., president of the Jones & Laughlin Steel Co., on "Our Future;" W. L. Jones, vice president and general manager, on "Our Past;" R. B. Drum, superintendent coal mines, on "The Black Diamonds;" M. J. Dowling, general superintendent steel works, "Those Furnace People;" W. H. Lewis, general superintendent Aliquippa works, "What Aliquippa is Going to Show the Pittsburg Works;" G. M. Laughlin Jr., general superintendent Soho furnace, "The Plates That Were Always Wanted Yesterday."

Some of the employes who responded were as follows: P. H. Gilday, assistant general superintendent coke oven and furnace departments, "My Dream of the Future;" N. C. Neemes, superintendent coke ovens, "The Old Plant;" Wm. Smith, master mechanic, "The New Plant;" J. O. Willard, engineer furnace department, "Get Together." Music by a quartet was a feature of the evening.

MINERS' DIAMONDS CASE DECIDED.

The Board of United States General Appraisers has handed down a decision sustaining the ruling of the collector of customs in the miners' diamond case. It thus overruled the protest of the Sullivan Machinery Co., the importer, which contended that three unset amorphous diamonds valued at $65 per karat should be entered duty free under paragraph 545 as "miners' diamonds not advanced in condition or value from their natural state by cleaning, splitting, cutting or other process" and "not set." An ad valorem duty of 10 per cent was assessed under paragraph 435.

National Valve & Mfg. Co.—The National Valve & Mfg. Co., organized last April, is now comfortably settled in its plant at Thirty-first street and Liberty avenue, Pittsburg. This company, which will manufacture valves and fittings, will make a specialty of pipe bending and contracting for complete pipe installations for power plants, mining companies, street railroad companies, open-hearth and blast furnaces and steel companies. The new plant includes the entire three-story building, 100 x 100 feet, at the location given above, and contains approximately 30,000 feet of floor space. The building has been re-arranged and refitted throughout, modernized in various ways and a very complete equipment of machinery and appliances necessary to the business installed. Thos. B. Moreland is president of the company, H. E. Haller vice president and superintendent of the manufacturing and contracting department, J. Lee Rodgers secretary and treasurer, and Thos. Fillingham engineer and superintendent of construction. With the exception of Mr. Moreland, all the officers of the new company were formerly with the Pittsburg Gage & Supply Co., where they held positions analogous to those they have taken in the new company.

The Anna stack of the Struthers Furnace Co., Struthers, O., suffered a break-out on June 1, and will be out of blast for a few weeks. The stack was blown in May 11.

FOR DRY GALVANIZING.

United States Sherardizing Co. Establishes Plant at New Castle, Pa.

The United States Sherardizing Co., whose incorporation was recently noted, has been organized and will locate a plant at New Castle, Pa. The company is controlled by New Castle, Pittsburg, and London, Eng., capital, and owns the exclusive rights in the United States to the new process of galvanizing known as "Sherardizing," under the Sherard-Cowper-Coles patents. The concern is capitalized at $450,000. Of this, $75,000 is in first preferred stock, $75,000 in second preferred stock, and $300,000 in common stock. None of the stock is now on the market. The company has erected a one-story brick building, 80 x 400 feet, and has secured practically all of its equipment. The following officers have been chosen: President, Charles J. Kirk; vice president, W. C. Robinson, Pittsburg; secretary and treasurer, H. H. Robinson, of Pittsburg. The directorate includes, besides the general officers: J. Norman Martin, New Castle; John H. Clapp, Washington, D. C.; C. E. Corrigan, Pittsburg, and H. F. Simpson, of London, Eng., representing British capital. Mr. Kirk has resigned the presidency of the New Castle Forge & Bolt Co. in order to devote his entire time to the new company. Edward Readel, vice president of the Forge & Bolt Co., will now become its active head.

Sherardizing was described as a process of dry galvanizing in THE IRON TRADE REVIEW about a year ago. Briefly, the process consists in packing the articles to be sherardized into a closed drum, box, or other suitable receptacle in contact with the ordinary zinc dust of commerce. The receptacle is then put into an oven and gradually heated to the required temperature, kept at that temperature for the required period, then allowed to cool down and emptied. The articles are then found to be evenly coated with pure zinc and the operation is finished. The zinc dust used is the sweepings of the flues of spelter or zinc furnaces, and is produced by the condensation of zinc fumes.

Whatever the action may be, the result when the receptacle is emptied is that the articles are found covered with a coating of pure zinc which, so to speak, has grown upon them, first by rooting itself into the material of the article, forming a surface alloy, and then growing upwards to any required thickness, 14 ounces and more per square foot having already been deposited as an experiment. This coating being a growth, naturally differs from the ordinary hot galvanized coating which is a homogeneous film of melted zinc wrapped round the article.

MAY ORE SHIPMENTS.

The ore shipments for May amounted to only 285,315 tons, a loss of 5,335,970 tons compared with May, 1907. The shipments to June 1 are 285,315, a loss of 5,966,946 compared with the same period of 1907. The shipments by ports were as follows:

	May, 1906.	May, 1907.	May, 1908.
Escanaba	680,490	722,516	16,245
Marquette	319.171	366,826	.....
Ashland	497,760	479,924	21,128
Superior	657,924	994,504	132.818
Duluth	1,140,761	1,835,921	86,691
Two Harbors	1,008,838	1,221,594	28,433
Total	4,304,954	5,621,285	285,315

	To June 1, 1906.	To June 1, 1907.	To June 1, 1908.
Escanaba	923,744	1.014,339	16,245
Marquette	404,397	376,873	.....
Ashland	632.062	495,194	21,128
Superior	868,187	1,101,183	132,818
Duluth	1,524,404	1,937,830	86,691
Two Harbors	1,399,546	1,326,842	28,433
Total	5,752,340	6,252,261	285,315

Committee Names Limit.—With reference to the extension granted by the readjustment committee of the Westinghouse Electric & Mfg. Co. to the merchandise creditors' committee, by which subscriptions to the proposed new issue of stock may be made until June 22, the following statement has been issued by J. N. Jarvis, chairman of the readjustment committee:

In compliance with the request of the merchandise creditors' committee, the stockholders' committee and the creditors' committee of the Security Investment Co., the readjustment committee has resolved to extend the time within which the subscriptions may be received from the various committees under the so-called merchandise creditors' plan until June 22, with the understanding, however, that this time will be the limit within which subscriptions will be received.

Engineers' First Convention.—The first annual convention of the Association of Iron and Steel Electrical Engineers will be held in Philadelphia June 24 and 25, 1908. The preliminary program of the meeting includes the election of new members, the presentation of papers, talks and discussions by members and by invited electrical manufacturers and engineers, visits to plants in the locality of Pennsylvania, and other excursions. The headquarters for the convention have not yet been fixed. G. H. Winslow, 559 Frick building annex, Pittsburg, is secretary of the organization.

MORE BUILDING

Authorized for Additions by Buckeye Steel Castings Co., Columbus.

Columbus, O., June 8.—At a meeting of the executive committee of the Buckeye Steel Castings Co., at Columbus, O., last week, the letting of the contracts for the third steel construction building at the plant was authorized. This building, like those for which contracts were let several months ago, will be 60 x 345 feet. All will be similar in construction except that the last one authorized will be higher than the others and will be equipped as a machine shop. This building will also house the blacksmithing department, the electrical department, the fitting department and repair shop and will enable the company to finish all of its own castings, without having to send them to outside shops. The improvements that are being made at the plant, which will also include a new producer gas plant and the largest pattern shops in Ohio, are being pushed to completion as rapidly as possible so the company will be able to take care of its share of the business when business revives. The improvements will increase the capacity of the plant 10 per cent.

The Pennsylvania Railroad Co. is negotiating for the purchase of the East Side Pumping Station at Columbus, O., which will be for sale as soon as the new purification and softening plant of the city is in operation. The railroad company, if it secures the east side station, will use it to furnish its water supply for the Panhandle shops located there.

The Quad Stove Mfg. Co., Columbus, manufacturer of steel army ranges for camping outfits, has received notice from the United States war department that its bid for furnishing field ranges for the fiscal year commencing July 1, has been accepted. By the contract the government is entitled to order 100 ranges a month.

Notices have been given the stockholders of the Kilbourne & Jacobs Mfg. Co., of Columbus, O., by the directors of the company that they will have the privilege of subscribing to one share of treasury stock of the company for every 20 shares that they hold now. It has been decided to dispose of 625 shares of the treasury stock at $140 a share, the proceeds to be used in the purchase of timber land in Kentucky. The timber is to be used by the plant.

Stack C of the Buffalo Union Furnace Co., Buffalo, was blown in on May 30.

LITTLE CHANGE

In Blast Furnace Situation in the Hanging Rock Region.

Ironton, O., June 8.—Little change has been apparent in the iron situation in this district during the past few weeks. There have been no suspensions and the Hamilton stack of the Hanging Rock Iron Co. has resumed after a suspension of several months. There is a disposition on the part of some of the directors of the Ironton Iron Co. to put their new furnace into blast and work up the stock on hand but others suggest waiting for a higher market. No definite action has been taken. The Ironton malleable plant is still idle with no immediate prospect for resumption. The nail mills here and at Ashland, Ky., are active and for a time have worked extra turns.

Several receiverships have claimed the attention of the district in the past week. The Union Iron & Steel Co. furnace, part of the Harper syndicate interests, which has been in the hands of the court, will be sold by Special Commissioner Chas. Peters at the plant, July 7. The real estate has been appraised at $45,000, and it is thought that the property will be bid in by Rogers, Brown & Co., Cincinnati, which recently acquired at federal court auction the $200,000 first mortgage bonds held by the Title Guaranty & Trust Co. for $25,000. Should this firm get the plant, which is very probable, it will be added to the chain of properties it controls, including the Hanging Rock Iron Co.

At Portsmouth, Judge Blair appointed Charles Blair, of Columbus, and N. J. Dever, of Portsmouth, receivers for the Ohio Stove Co., and $5,000 bond was required of each. The receivership was granted on application of Linn Bentley, of Columbus, who is holder of $6,500 of stock. In the petition it was set out that the assets are $90,000 and the outstanding debts about $24,000, but inability to obtain ready money to operate the plant necessitated the action. The company has been in business 36 years and there has been issued only $32,000 of the $44,500 authorized capital stock. It is expected that the company will be put in good shape after a short receivership.

Last week application was made at Portsmouth for a receiver for the Portsmouth Pressed Steel Co. by Attorney Jos. Micklethwait, representing the United Steel Co., of Canton, O., which last October obtained a default judgment for $516.25. The Pressed Steel Company has a plant at Portsmouth for the manufacture of a patented car replacer and other steel products and the property is mortgaged for $5,000; there is $300 corporation tax delinquent for three years and personal taxes are unpaid. F. C. Ketter, of Portsmouth, was named as receiver with bond of $5,000 required. The plant has not been in operation for some time.

An unusual accident occurred last week at the Wellston Steel Co.'s plant No. 1. The furnace stack, while full of molten metal, suddenly split from top to bottom and fell in ruins. The top filler had just come down and escaped certain death. Fortunately none of the workmen were near enough to be caught by the fall, which was due to a slip. The accident occasions considerable loss to the company and necessitated suspension.

The Scioto Manufacturing Co., capital $7,000, will soon begin the manufacture of a spiral spring washboard at Portsmouth. Machinery will be installed which will make a corrugated board from the wire.

The Ashland sheet mill has had more or less trouble recently on account of labor differences. The men objected to being paid by the ton instead of by the pair. President Lewis of the Amalgamated Association has been requested to investigate the matter.

President W. L. Glessner, of the Portsmouth Steel Co., visited the Portsmouth plant last week and the foundry department resumed. He reported that the company had sufficient orders for an extended run. The new corrugated iron bar mill at the plant is about ready for operation and will employ 60 men. Supt. Floyd Rose, who resigned his position with the company some time ago, has located in Pittsburg.

According to the annual report of the Columbus & Hocking Coal & Iron Co., for the fiscal year ending March 1, which has just been issued in pamphlet form, the gross earnings of the company for the year were $846,759, an increase of $261,000 over the preceding year. The operating expenses and charges for depreciation were over $675,532, an increase of $21,000 over the previous year. The fixed charges, taxes, etc., were $129,058, an increase of $53,000. The surplus was $60,169, a decrease of $4,900.

Furnace D of the Bethlehem Steel Co., South Bethlehem, Pa., was blown out on May 10.

PHILADELPHIA FOUNDRYMEN'S ASSOCIATION.

The concluding meeting for the season of the Philadelphia Foundrymen's Association was held at the Manufacturers' club on the evening of June 3, when A. A. Miller, of the short weight committee, presented a printed report of the minutes of the meeting held in March of the committee of representatives of consignors, transportation companies and consignees formed to discuss the grievances of many foundrymen, concerning the discrepancies often noticed in the weights of coke, coal and pig iron as shipped and as received. The report which was made to Chairman Henry A. Carpenter is a stenographic abstract of the proceedings and contains no conclusions or recommendations, but leaves the subject open to be acted upon at a subsequent conference. The best method of remedying the evils, according to some of those who took part in the discussions, would be to have carload lots weighed on a railroad track scale at the time of their receipt, the cars thoroughly cleaned after unloading and then weighed again. This would show the exact weight of the shipment received. The representatives of the railroads absolutely refused to consider any claims for short weights in cases where freight is hauled by teams from yards to the point of destination, as the openings for fraud on the part of drivers or others are too many to be guarded against. Mr. Miller did not read the report at the meeting, and it was accepted without discussion.

Louis L. Amonson, president of the People's National Fire Insurance Co., now forming in Philadelphia, gave a general talk on "Fire Insurance," without any particular reference to the risks of foundries and similar establishments. A supper followed the meeting.

Detroit Foundrymen's Association.—"Malleable Cast Iron" was discussed by Dr. Richard Moldenke at the monthly meeting of the Detroit Foundrymen's Association held Monday evening, June 1. This organization has grown tremendously in membership and nearly 100 foundrymen are already enrolled.

The second annual convention of the United Sons of Vulcan was held in Pittsburg last week, and matters bearing upon the interests of the organization during the coming year were disposed of.

THE INDUCTION CLUTCH AND ITS APPLICATIONS IN DRIVING REVERSIBLE MACHINERY

For many reasons it is preferable to drive heavy machinery that must be frequently and quickly started and reversed by a combination of a continuous running motor and clutch gearing of suitable design rather than by reversing motor, the advantages becoming more pronounced the more frequent the reversing and the quicker the acceleration demanded. This claim is made only in case the clutch mechanism used has ideal properties as regards wear, heat dissipation, ease of control, simplicity of construction, and relatively low inertia of reversing parts. The reversing motor, as against the continuous running motor, labors under the great disadvantages of having to overcome its own inertia at start and stop in addition to that of the driven machinery. This not only puts an additional load on the motor at start and stop but limits the size of motor that can be used if a quick reverse is required because the larger the motor the longer the time required to reach full speed without overload, simply on account of the armature inertia.

Many rolling mill engineers, in their experience with quick reversing tables, have for this reason encountered more instead of less trouble by replacing small motors with larger ones. On the other hand a continuous running motor doing the same work through clutch gearing obviously uses its own inertia to advantage during acceleration and reversing of driven machinery, hence other things being equal, the larger the motor used the less danger of overload. Furthermore a continuous running motor with a drooping speed characteristic, when used in connection with clutches of proper design, smooths out the load curve by utilizing the fly wheel energy during the short periods of acceleration and reverse of driven machinery. This smoothing-out feature may be carried to any desired degree by provision of sufficient fly wheel capacity in the continuous running members.

A direct current reversing motor, unless it has commutating poles, always has the disadvantage of having its brushes set at a point midway between the most advantageous points for forward and reversed rotation instead of at these points, as in the case of a motor running continuously in one direction. This consideration does not count for much where the motor is not heavily loaded, but it becomes significant when the motor is working under full load or overload in either direction. The reversing controller which must accompany it, labors under disadvantages too well understood to require discussion here.

So far only the motors and load curves have been considered. The problem of controllers for quick reversing motors, and especially for large motors in the hands of presumably careless and ignorant operators, is one that is difficult of solution, and especially difficult where simple construction is required. On the other hand, in the case of the continuous running motor always allowed to start under no load and requiring no controller at all beyond the ordinary starting box, when used in connection with an electrical induction clutch gearing such as will be described later, the motor as well as the clutch gearing and driven machinery are protected against the most careless handling by the operator by properties which are inherent in the design of the clutch. In addition to being simple and fool proof this drive insures quick acceleration on ac-

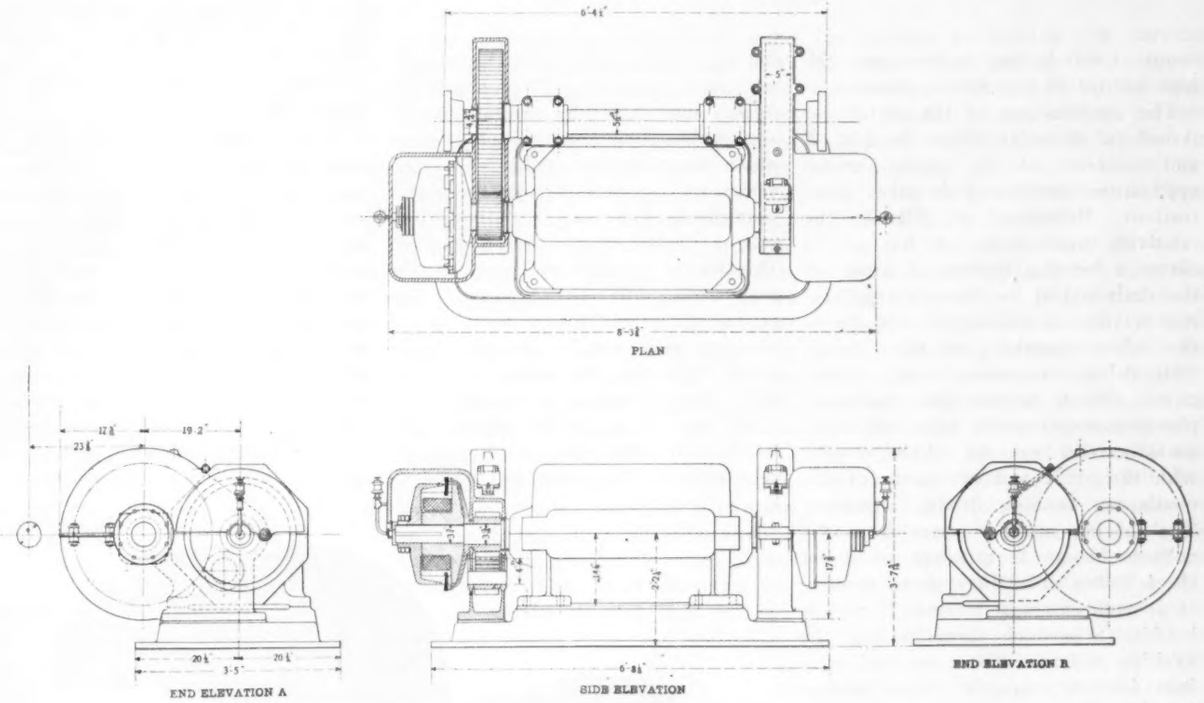


FIG. 1—50-HORSEPOWER DRIVE FOR ROLLING MILL TABLE USING INDUCTION CLUTCHES.

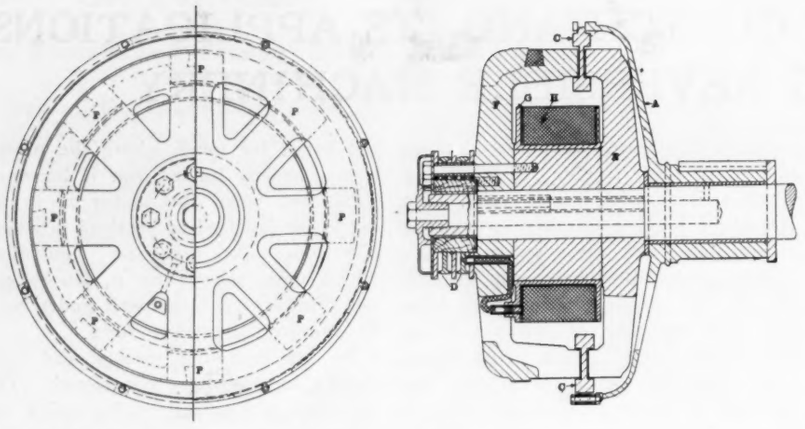


FIG. 2—CROSS SECTION, HALF FRONT AND HALF BACK VIEW OF STECKEL INDUCTION CLUTCH.

count of not having to overcome the high inertia of the motor armature.

The construction of the clutch referred to above is shown in Fig. 2, and several of its many useful applications are shown in other illustrations. Referring to Fig. 2, the relatively light spider A has at its center a bearing bushing B loose on the shaft and at its circumference carries a ring of copper C, and forms the driven member of the clutch. This driven member may deliver power directly or through a pulley or pinion mounted on its hub. All other parts carried on the shaft revolve with the shaft and are parts of the continuous running driving member. The driving member apart from the collector rings D attached to it on the left, has only three parts, namely, two steel castings E and F and a bobbin G between them holding the exciting coil H. The two steel castings form a magnetic circuit broken by the air gap at the circumference, in which gap the copper ring C is situated. The steel castings are cut away at the outside so as to concentrate the magnetic flux at eight poles P, leaving spaces between the poles through which there are no magnetic lines except the few due to leakage. The copper ring is allowed ample running clearance between the oppositely facing poles.

When current is flowing in the exciting coil and the driving member is revolving the copper ring is dragged after the driving member by mutual attraction of the magnetic flux and the eddy currents set up in the copper, an action familiar to electricians and known as an "eddy current drag." The action is the same as that of the induction motor except that in this case the revolving field is a field fixed relatively to the driving member and revolved mechanically by revolving that member. The clutch is thrown into action by turning current into the exciting coil through brushes which bear on the collector rings. When this circuit is broken the clutch instantly lets go and no force whatever is exerted on the driven member. The forces brought to bear on the copper ring are entirely in a tangential direction, hence there is no tendency whatever for the ring to be drawn over to the poles on either side. Since there is no friction there is no wear at all in the clutch. The relations between slip and torque are substantially the same as those obtaining in the case of the induction motor and the well known variations in slip-torque relations that can be produced in the induction motor by varying the conductivity of the secondary circuits are here obtained by designing the ring with greater or less thickness in the web or flanges or both, or by varying the strength of exciting current. Greater or less exciting current gives greater or less torque for the same slip, and conversely less or greater slip for the same torque. The speed of the driven member may thus be controlled by varying the strength of the exciting current if such speed control is ever desired. Unless speed control is wanted it is most economical to throw on the full exciting current because under full magnetization the clutch transmits a given torque with the minimum slip.

It is standard practice with the manufacturer of these clutches to rate them at the power which they can transmit at an efficiency of 90 per cent at a given rate of speed. For example, a clutch rated at 25 horsepower at 500 revolutions per minute receives 25 horsepower at 500 revolutions per minute on the driving side and gives off 22½ horsepower at 450 revolutions per minute from the driven side. The loss in the clutch is a loss of speed due to the necessary slip, but the full torque is transmitted. At

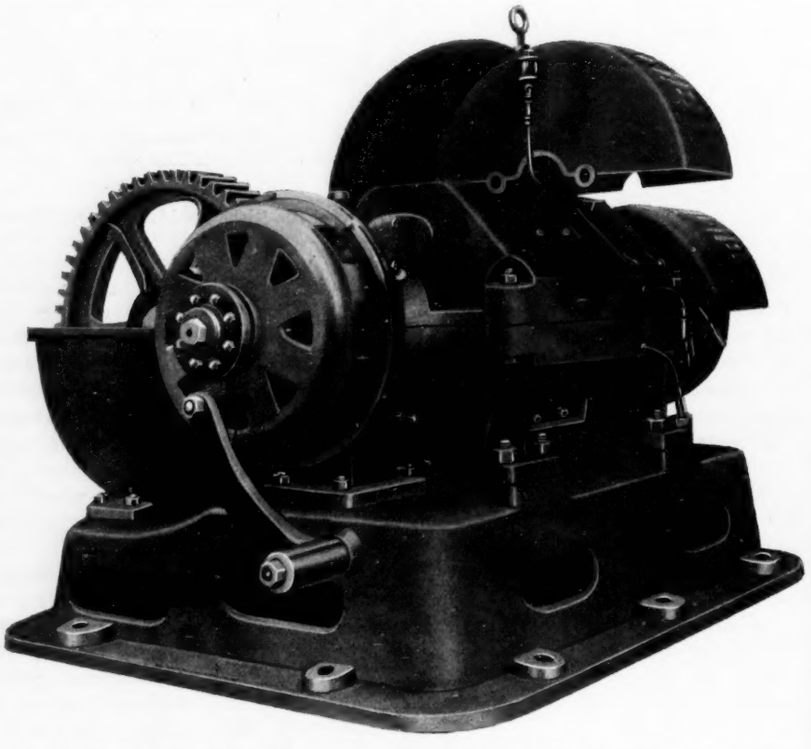


FIG. 3—INDUCTION DRIVE ATTACHED TO ROLLING MILL TYPE MOTOR, GEAR CASES REMOVED.

times when only one-half the full rated torque is called for the slip will be only about one-half as great. At such times the efficiency is 95 per cent and if the clutch is called upon to transmit more than the full load rated torque it loses more than 10 per cent of the revolutions of the driving member but the limiting torque that the clutch can transmit is usually fixed at 50 per cent in excess of full load rated torque. If a greater torque than this 50 per cent excess is called for the driven side of clutch is stalled, but the driving side continues to revolve merely loading the driving member to 50 per cent overload but no more. Under these conditions all the power of the motor is converted into heat in the copper ring and this heat is readily dissipated by a strong blast of air thrown against the ring by the revolving poles which act as fan blades. The ring is so proportioned that it heats uniformly all over and hence does not buckle even at a red heat. Freedom for expansion is allowed by holding the ring at its outside circumference by fastenings which allow free expansion radially when heated but positively lock the ring to the spider as regards rotary motion. When doing its rated full load work the ring is so well cooled by the blast of air thrown against it by the poles of the continuous running driving member, that it is barely warm and it is only when stalled that a higher temperature is reached.

In rating these clutches the temperature rise is not considered as the limiting factor, as is the case with dynamos and motors, because all parts are designed to stand very high temperatures, the copper ring of itself being indestructible, and the exciting coil being wound with asbestos covered wire. The clutches are hence rated at the pull which they can exert and it is immaterial whether this pull is exerted only momentarily or continuously so far as consideration of temperature is concerned. The clutches are remarkably small as compared with the motors whose power they transmit, a clutch of 90 per cent efficiency usually weighing only one-seventh as much as the motor with which it is used.

From the foregoing it is apparent that the clutch has ideal properties for use in clutch gearing between a continuous running motor and driven machinery which must be very frequently started, stopped, and reversed, and subject to stalling and careless handling. The full exciting current is about two per cent of the full load rated motor current, and it is only this small current that is handled by the operating switch, the motor circuit being left undisturbed as long as the drive is in use.

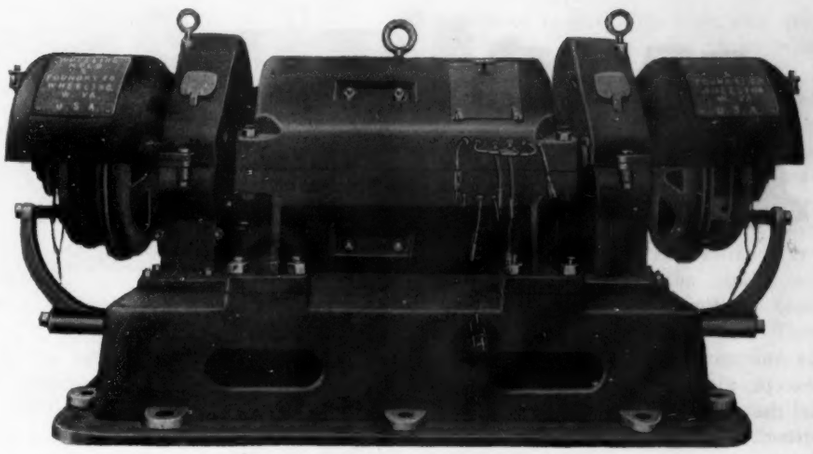


FIG. 4—30-HORSEPOWER INDUCTION DRIVE.

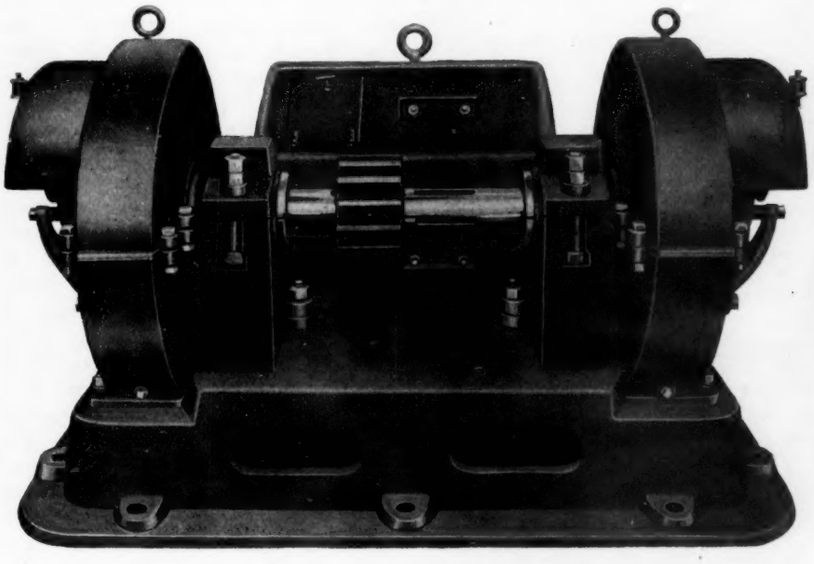


FIG. 5—REAR VIEW OF MOTOR WITH INDUCTION CLUTCHES ATTACHED, SHOWING PINION SHAFT FOR TABLE DRIVE.

Fig. 1 shows a drive of 50 horsepower capacity as built for operating rolling mill tables. The motor is of the well known rolling mill type, all parts being extra heavy, especially the shaft, and the same rugged construction is used in the clutch gearing. The motor is compound wound, having a no-load speed of about 700 revolutions per minute and a full load speed of 500 revolutions per minute. The difference betwen no load and full load speed gives a good range for the utilization of the fly wheel energy of the motor armature and of the relatively heavy driving members of the clutches. The clutches, of which there must always be two in reversing drives, are hung on either end of the extended motor shaft, the shaft being heavy enough in all cases to allow of this simple method of mounting. Referring to the side elevation, in Fig. 1, the clutch on the right drives a pinion on its driven member, which pinion meshes with the gear on the back gear shaft of the motor. The arrangement on the left hand end of the motor is the same except that there is an intermediate idler pinion between the driving pinion and gear. The idler rotates on a stationary pin held by the heavy gear case, as indicated in the end elevation A. When the clutch to the right is energized the back gear shaft is driven in a direction opposite to that of the motor, and when the clutch to the left is energized the back gear shaft is driven in the same direction

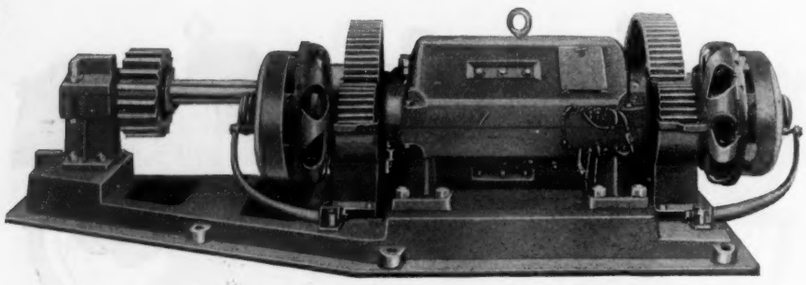


FIG. 6—75-HORSEPOWER INDUCTION DRIVE FOR ROLLING MILL WORK.

as the motor. No controller is used except a two-point switch handling, in the case of this 50 horsepower drive, five amperes of clutch exciting current, which current is thrown into one or the other clutch to drive with full power in either direction. No harm can result from throwing the control switch from one side to the other as rapidly as the hand can move it, since 50 per cent overload is all that can be thrown on the motor even if the back gear shaft is locked, and the clutches are not harmed by having to dissipate in heat all the power that the motor can deliver to them even under this, the severest condition. As soon as the driven side is unlocked the drive is again ready for operation, the action of the clutches being practically the same when red hot as when cold. On account of the self induction of the clutch-exciting coil a short but definite time is required for the exciting current to reach full strength after the switch is thrown. This feature prevents any hammer blow in the gears of the driving and driven machinery at start or reversal on account of the taking up of back lash, thus making a start or reversal with perfect smoothness. The clutch can be made to respond practically instantaneously to the throw of the control switch if desired by winding the exciting coils with heavier wire and limiting the strength of exciting current by means of an external non-inductive resistance left permanently in the exciting circuit. This has not been found necessary in any work so far encountered, as sufficiently quick response for all practical requirements is obtained by the use of wire small enough to furnish of itself all the resistance desired.

Oiling of the idler gear bushing and of the loose bearing inside the driven spider is taken care of by oil retaining bushings the details of which are not here shown. These are filled with oil by means of holes central in the idler pin and motor shaft while the drive is in operation, and one filling of oil lasts for days. Other bearings are of the ring oiling type. The whole design of this drive is suited to rolling mill conditions where fool-proof properties are demanded. If the bearings are given oil every few days and the brushes are in contact with the collector rings no other attention is required, and the absence of complicated automatic controllers makes this drive dependable in the hands of ordinary workmen besides being quicker and smoother in operation than a reversing motor.

At the new Saucon plant of the Bethlehem Steel Co., 13 of these drives, each of 30 horsepower capacity, are in use driving reversing tables and manipulator, and one of 50 horsepower operating a beam transfer. Ordinarily in the case of the manipulators hydraulic power would have been used on account of frequent stalling. These drives are in satisfactory operation. Two of 50 horsepower each are in operation at the South Works of the Illinois Steel Co., driving slabbing mill tables, and two of 75 horsepower each are being installed at the Ensley plant of the Tennessee Coal, Iron & Railroad Co., on roughing mill tables. Photographs of the rolling mill type of drive are shown in Figs. 3, 4, 5 and 6. Fig. 7 shows the drive as applied to metal planers. This drive is in use on several heavy planers, in which connection it is most satisfactory on account of its simplicity, perfect smoothness of acceleration, ability to stall without injury, and ease of control. When used as a planer drive reversal is accomplished by the dogs throwing the control switch and the very simple attachment to this switch gives a large range of cutting and return speeds independent of each other by regulation of the shunt field current of the motor.

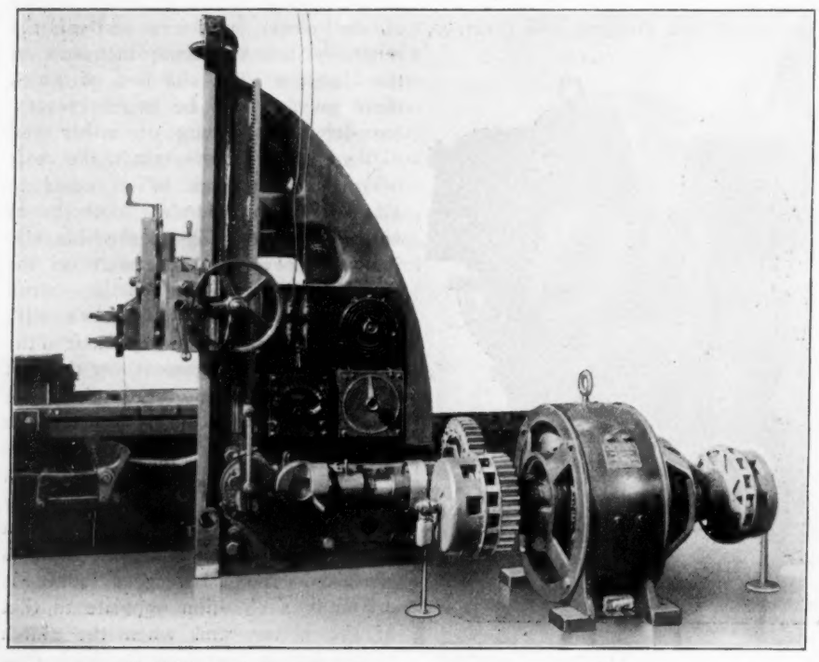


FIG. 7—INDUCTION DRIVE APPLIED TO PLANER.

Fig. 10 shows a 75-horsepower induction drive with motor attached, temporarily, to heavy blooming mill tables in the Wheeling Mold & Foundry Co.'s shop. Fig. 8 shows performance curves of a clutch 16 inches diameter, the abscissas being revolutions of slip and the ordinates being pounds of torque at one foot radius and corresponding horsepower at 800 revolutions per minute. The curves in full lines show performance where a relatively high resistance copper ring is used, and the curves in broken lines show performance where a relatively low resistance copper ring is used. On each

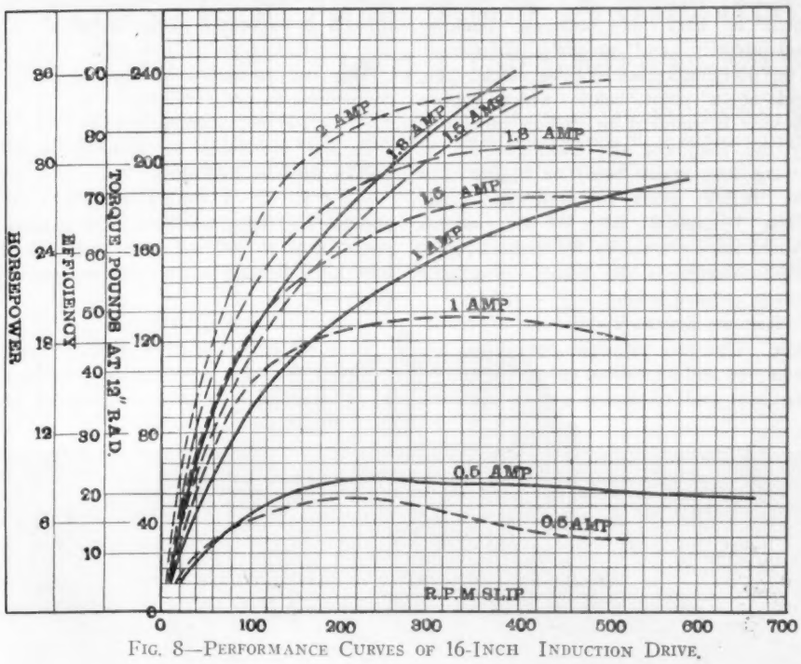


FIG. 8—PERFORMANCE CURVES OF 16-INCH INDUCTION DRIVE.

curve is indicated the exciting current used throughout points on that curve. Two amperes at 220 volts is the full exciting current used for this 16-inch clutch. It will be observed from the curves that other things being equal a ring of greater conductivity gives greater torque at lower rates of slip than does a ring of less conductivity, and that this condition is reversed at high rates of slip. Hence rings of high resistance are used where high starting torque is desired more than is high running efficiency under steady load, and low resistance rings are used where high running efficiency is of greater importance than high starting torque. Both high efficiency in steady full load running and high starting torque can always be obtained, if desired, by using a larger clutch. By using rings of relatively high resistance a very simple slip control is obtainable by varying the exciting current with the rheostat. By consulting the curves it is readily seen why this can be done over a wider range with high than with low resistance rings.

Fig. 9 shows another method of construction. In this arrangement, the drives with their gears are at one end of the motor with a central driving shaft connected to the motor by a flange coupling. Each spider sleeve has an outside, ring oiling bearing on each side of the pinion, so that the sleeve does not come in contact with the driving shaft. This clutch is capable of being applied in numerous connections simply as a clutch to be thrown in and out by means of closing the exciting circuit. However used it has the property of positively protecting the driving and driven machinery against overload beyond the capacity of the clutch, which capacity is under control by fixing the strength of the exciting current.

In connection with reversing drives, the field in which this drive seems best adapted is that of driving reversing rolling mill tables, metal planers, elevators, mine hoists and reversing rolling mills, using power from either direct or alternating current continuously running motors. The clutch and drive have been re-designed in most particulars to suit requirements for the last two applications named, and gives promise of being a most practical scheme as regards simplicity and first cost and of high efficiency.

Exclusive rights to the manufacture and sale of the induction clutch in various forms, and of the induction

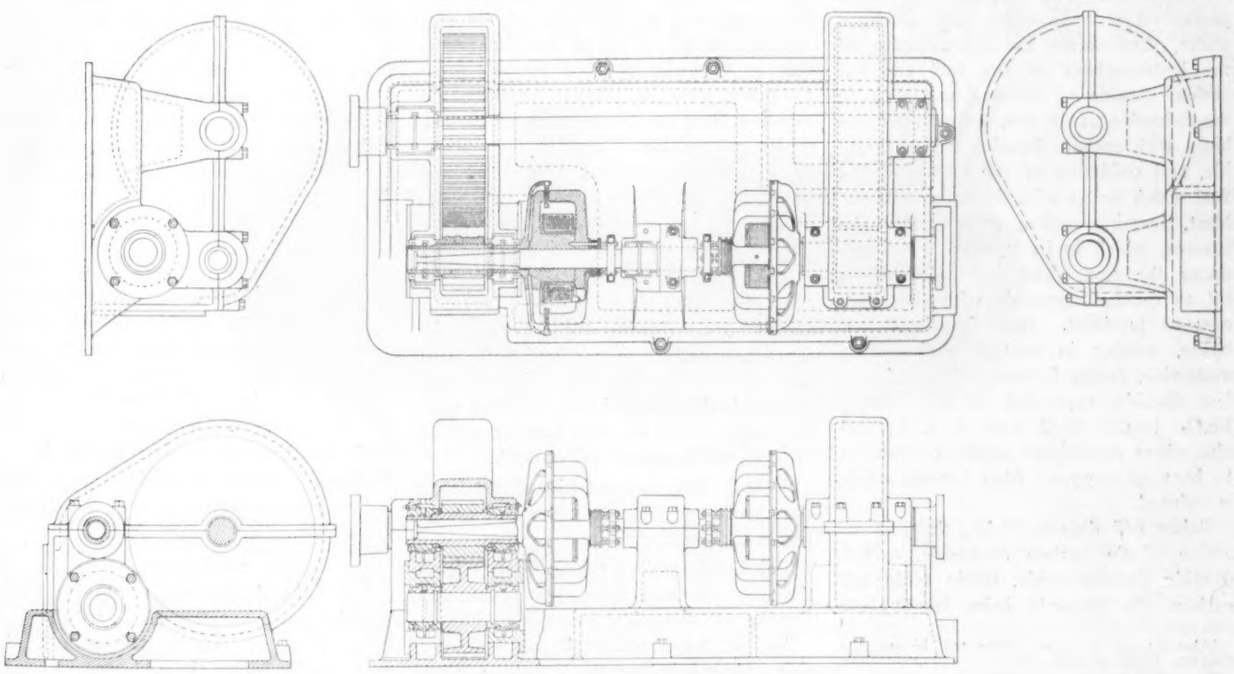


FIG. 9—ARRANGEMENT OF INDUCTION DRIVE WITHOUT MOTOR.

drive, are held by the Wheeling Mold & Foundry Co., Wheeling, W. Va., under patents taken out by A. P. Steckel, of Buffalo, N. Y., and F. duP. Thomson, of Wheeling.

NOTES ON THE REACTION OF THE BLAST FURNACE.[1]

By H. L. Clay.[2]

Under normal conditions the modern division of the furnace is into four zones: that of preparation, that of reduction, that of heat interception, and that of fusion.

Of the solid materials, charged at the top of the furnace, over 50 per cent passes off in the form of gas. This is not limited to the first zone, but extends through all the zones. The first material which passes off is hygroscopic and combined water, then comes the volatilization of the hydrocarbons of the fuel and the carbon dioxide of the flux and air. In the reduction of the ore, the oxygen combines with carbon, forming carbon dioxide, and oxidation of the carbon of the fuel which unites with the oxygen of the blast, forming carbon monoxide at the tuyeres, which in its upward course reduces the ore. The remainder passes off as carbon monoxide with the other gaseous products. Here is where iron oxide, coming in contact with carbon monoxide, forms ferrous oxide and carbon dioxide, expressed in the formula $Fe_2O_3 + CO = 2\ FeO + CO_2$; and also where amorphous carbon commences to burn in oxygen. Also ferrous oxide is reduced.

Below 647 degrees Fahr., there is no action of the carbon monoxide, carbon dioxide, ferrous oxide, ferric oxide and carbon. To properly bring about these chemical reactions the first requirement is heat of sufficient quantity and intensity, and properly distributed. The minimum is at the stock line, and at a point below which carbon dioxide is reduced to carbon monoxide by the fuel, and the maximum at the tuyere line, which must be higher than the fusing point of iron and slag. Each horizontal layer of the contents should have practically the same temperature throughout its whole area and remain at fixed heights.

Now we approach the zone of reduction. The two principal operations are reduction and oxidation, reduction absorbing heat and oxidation generating heat. And while the heat absorbed in reducing any quantity of iron from its ore is not affected by the mode of reduction, the heat generated by oxidation of the carbon is; and this is one of the vital points that go to make up good furnace practice; viz., that no oxygen shall be abstracted from the ferric oxide by carbon, which necessitates that all the carbon shall reach the zone of combustion and there be burned to carbon monoxide, which on its upward course reduces the ore and becomes itself carbon dioxide.

The reduction of ore may and does take place in three different ways:

First—By oxidizing the carbon at the tuyeres to carbon monoxide, by the oxygen of the entering blast. The carbon monoxide thus formed takes another atom of oxygen from the ore, forming carbon dioxide, which passes off as such.

Second—The carbon taking direct from the ore two atoms of oxygen and escaping as carbon dioxide.

Third—The carbon taking directly from the ore only one atom of oxygen and passing off as carbon monoxide.

And all three modes take place side by side. Here is where the limestone is reduced to lime, and carbon dioxide is formed as expressed by the formula

$$CaCO_3 = CaO + CO_2$$

Also the reduction of ferrous oxide commences as per formula

$$FeO + C = Fe + CO.$$

Carbon monoxide is formed, water breaks up into hydrogen

$$2\ H_2O + C = 2H + CO_2,$$

and at 1,500 degrees Fahr. the furnace stock is at a full red heat and carbon monoxide formed in it is at maximum, expressed

$$CO_2 + C = 2\ CO.$$

Then we have the zone of heat interception, and the combination of silica with oxide of iron at a temperature of about 1,600 degrees Fahr., and the preliminary stage of slag formation in all blast furnaces, where only traces of oxygen are found in the ore and the furnace is a very bright red. Above 2,000 degrees cast iron melts; and this leads us to the zone of fusion, where we have the flowing slag, the melting of pure iron and the furnace at a white heat, the temperature at the tuyeres being about 3,720 degrees Fahr.

[1]Abstract of a paper presented before the Crucible Club, Jackson, O.
[2]Star Furnace Co., Jackson, O.

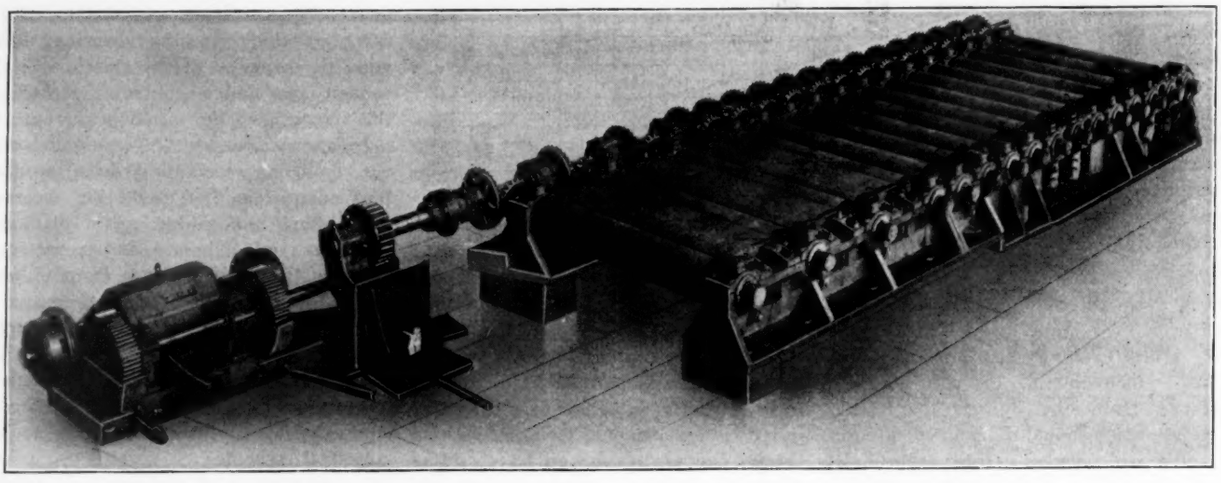


Fig. 10—75-Horsepower Induction Drive Attached to Rolling Mill Table.

The Morgan Construction Co. Worcester, Mass., is just completing the installation of a double strand, Morgan continuous rod mill for the Societe Anonyme d'Ougree-Marihaye, Ougree, Belgium. This mill is a duplicate of the Morgan mill now operated by Acieries & Laminoirs de la Plaine St. Denis, in Paris, except that it has been arranged to roll 400-pound coils.

The John A. Roebling statue in Cadwalader park, Trenton, N. J., will be unveiled June 25. Former Governor E. C. Stokes will deliver the address.

CONSTRUCTION AND WIDENING USES OF THE ROLLING MILL MOTOR

The accompanying illustrations show the external appearance and the method of construction of the Form W rolling mill motor, designed by the Crocker-Wheeler Co., Ampere, N. J., following the recommendations of leading mill engineers of the country. Although originally used only to drive transfer tables, these motors are now applied to punches, shears, furnace chargers and screw-downs. They are employed, in fact, for all purposes requiring power within the range for which they are built, 7½ to 200 horsepower. The purpose of this article is to make clear a number of points in the construction of this motor and to report the results of several experiments in its operation.

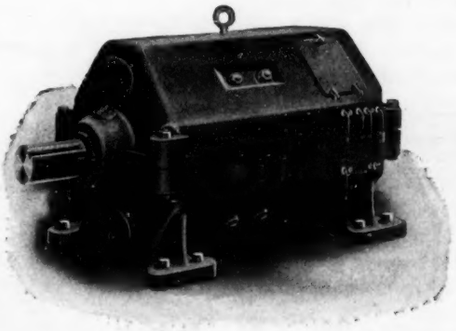


FIG. 1—CROCKER-WHEELER FORM W ROLLING MILL MOTOR.

The duty for which it is designed is the most severe to which a motor can be put. In driving transfer and reversing tables the sudden and frequent starting and reversing impose severe strains upon the motor, both mechanically and electrically. The starting load is frequently as much as four or five times the normal running load and when it is considered that heating increases as the square of the load, the strains these motors have to endure are evident.

The frame of the motor is entirely of steel, in but two parts which are readily separable by removing four corner bolts. When equipped with countershaft bearings these bearings form part of the lower casting so that they are not disturbed when the top half is removed for inspection or repairs. The motor stands on four feet placed at the extreme corners to obtain the greatest possible spread and each foot is drilled for two extra heavy holding-down bolts.

As an experiment, one of these motors driving a roll table recently was suddenly reversed from full speed forward to full speed backward without controller resistance, just to see what the motor would do. The sudden reversal pulled the holding down bolts through the foundation and turned the motor on its side. The motor was reversed and resumed its proper position and was run till the end of the heat, after which it was again secured to its foundation and has operated ever since without repairs of any kind. This will give some idea of the great mechanical strength these motors possess.

The insulation of the windings is entirely of asbestos and mica, both of the field coils and of the armature. This insulation does not deteriorate under heat and will stand higher temperatures, in fact, than the copper conductors. An armature coil was recently tested by passing current through it until the copper fused. The current was then shut off and the coil allowed to cool and the metal solidify, after which it was found that the insulation was as good as before. Upon stripping the insulation from the coil with a hack saw the marks of the winding could be plainly seen imbedded in the metal, proving conclusively that the metal had fused. The insulation, however, retained its shape. One of these armature coils was shipped from Ampere to Chicago, simply wrapped in burlap, and upon arrival at its destination had retained its shape perfectly.

The field coils are held in place by metal clamps, entirely independent of the pole shoes so that no strain whatever is borne by the pole shoes. The armature coils are held in the slots by means of metal latches. The absence of band wires held by solder also enables the motor to withstand much higher temperatures.

In spite of the heavy shafts furnished with these motors, it is sometimes necessary to replace a damaged shaft. This is easily accomplished by forcing the shaft out of the armature core and forcing the new shaft in. As the armature core is built up of laminations with the shaft hole punched, the holes are all of exactly

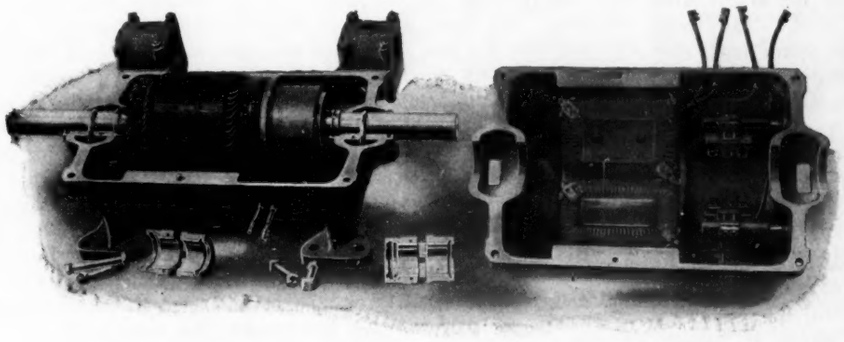


FIG. 2—CROCKER-WHEELER FORM W ROLLING MILL MOTOR OPENED UP.

the same dimensions and the shafts are ground to exact dimensions so that parts are absolutely interchangeable. The armature coil laminations are rigidly clamped together, forming a solid mass, and the commutator spider is mounted on a sleeve projection of the armature core end flange, independent of the shaft. There is therefore no strain on the commutator in removing shafts. Shafts are furnished either straight or tapered.

The brush rigging is of rigid construction to withstand the heavy jars and vibrations. Provision is made for taking up commutator wear and adjustment along the commutator. The insulation is so arranged that there is a very large creeping surface between the current-carrying parts and the frame of the machine. The commutation of the machine is such that polished commutators result under all conditions of load. This means little commutator wear and very long life.

The bearings of these motors are so constructed that no oil can creep outside of the journal boxes. There is a large groove surrounding the shaft at each end of the journal box with an overhanging apron forming part of the casting. By this means all oil is returned to the reservoir, and the admission of dust into the journals absolutely prevented. The bearings are arranged for ring oiling, but are also furnished for grease lubrication.

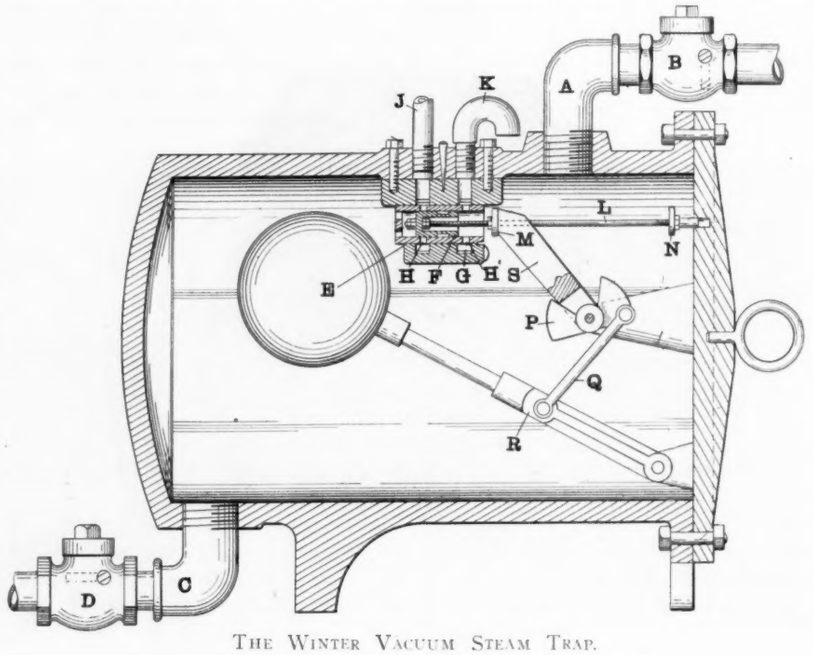
A feature of these motors is the fact that fields are furnished either series wound or series-shunt wound. The series-shunt winding is for the purpose of preventing the motor from racing under light load. The shunt winding prevents the motor from running at more than double speed when the load is removed. It is recommended in all cases where the load varies through wide ranges, such as punches, shears, etc.

The Taylor Coal & Coke Co., at its annual meeting held at its plant at Searights, Pa., elected the following officers: President, Frank H. Moore; vice president and treasurer, H. A. Fuller; secretary, S. A. Fuller; directors, Frank H. Moore, S. A. and H. A. Fuller, C. Bolton, Cleveland, O.; D. B. Stuart and M. H. Bowman, of Uniontown, Pa. Prior to the business meeting, the officers and a number of stockholders inspected the plant at Searights.

THE WINTER VACUUM STEAM TRAP.

The accompanying illustration shows the Winter vacuum trap placed on the market by the Strong, Carlisle & Hammond Co., Cleveland. The trap is designed for use in connection with engines, condensers, steam pipe or other locations where water in connection with steam is apt to cause damage.

Referring to the illustration, the trap consists essentially of a body cast with one integral head and one removable head, the latter being held in place by bolts that pass through a flange on the body of the trap. Steam is admitted to the body of the trap through the pipe A on the upper side, this pipe carrying an inlet check valve B. The check valve is of the swinging type and opens towards the trap. The lower portion of the trap is connected to a pipe C carrying an outwardly swinging check valve D. The check valve B may be connected by piping to the exhaust pipe of the apparatus desired to be drained, and the check valve D may be likewise connected to a suitable point of discharge.



THE WINTER VACUUM STEAM TRAP.

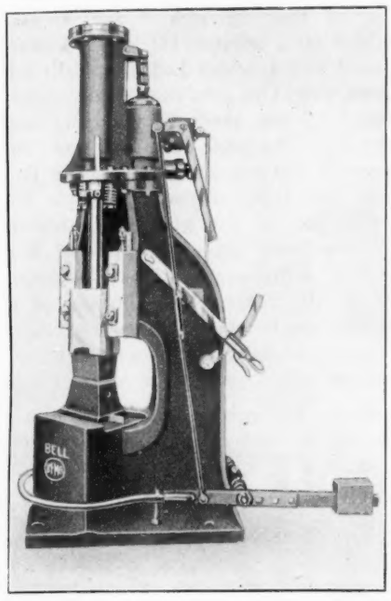
The operating mechanism of the trap is disposed in the interior of the body. It consists of the following apparatus: A valve chamber E is held in place by bolts, and within this valve chamber is a bronze bushing, in which is arranged a piston valve F. The valve chamber is provided with internal ports G which communicate with two radial ports H and H′ in the bushing, the ports G being in communication with the pipes J and K, the former of which communicates with the exhaust pipe or apparatus to be drained, and the latter with the atmosphere. Pipe K is in the form of an elbow joint, the opening of which is downward to prevent the entrance of dirt to the valve.

The piston valve F has connected to one end of it a valve stem L. The head of the bushing in the valve chamber is openwork construction and serves to limit the motion of the valve stem in one direction. The motion in the opposite direction is limited by a socket nut screwed on the valve stem which works on a socket in the removable head of the trap. The valve stem also carries two adjustable discs M and N, which are held against longitudinal movement on the rod by nuts.

The removable head carries two inwardly projecting brackets, the upper one of which supports a shaft, upon which is loosely mounted a rocker P. This rocker connects with one end of a link Q, the other end of which is pivotally connected with a lever R fulcrumed on a shaft on the lower bracket. The outer end of this lever carries an extra heavy seamless ball float which will impart positive rocking movement to the lever, when the levels of the water in the trap vary. Mounted for rocking movement on the same shaft as that carrying the rocker P, is a hammer S of unstable equilibrium. The outer end of the hammer is bifurcated to provide two arms that straddle the valve stem. The rocker P is provided with two toes that engage the hammer and give the necessary valve movement. The various parts are all made of metal which will stand corrosive action, insuring efficiency in operation at all times.

The operation of the trap is as follows: The parts are assumed to be in the positions shown in the illustration, which is the case when the trap con-

tains its maximum volume of water, and when the hammer has just acted and shifted the valve F to the position shown. The port H′ communicates with the steam or air pipe and the instant that the parts assume the position shown, steam or air rushes in and destroys the vacuum in the trap body, holding the inlet valve B to its seat, while the outlet valve V opens by gravity and permits the accumulated water to escape. As soon as the ball float begins to lower by the falling of the water level, the forward toe of the rocker P will be moved to the right, and by con-



NEW BELL STEAM HAMMER.

tact with the yoke of the hammer, will shift to the same direction.

As soon as the hammer passes the dead center it falls to the right striking the disc N a blow and shifting the valve stem so as to close the port H′ and open the port H, whereupon the vacuum is once more established and maintained until the water of condensation reaches such a level as to cause the toe at the rear of the rocker P to move to the left and shift the hammer causing it to fall to the position shown in the illustration, destroying the vacuum and repeating the operation as outlined above.

The standard trap is made in one size only with a 2-inch inlet and outlet. When operated by gravity it will discharge over 1,400 gallons of water per hour. If necessary this capacity can be doubled by increasing the size of the inlet and outlet and using steam pressure to discharge.

No. 1 blast furnace of the Ohio works stacks of the Carnegie Steel Co., at Youngstown, O., was blown in May 27. Within two or three weeks No. 2 stack will be blown out for repairs.

A NEW DESIGN OF STEAM HAMMER.

The accompanying illustration shows a new steam hammer just placed on the market by the Buffalo Foundry & Machine Co., Buffalo. This hammer is known as a combined hammer, owing to features of its design, which enables it to be used for doing light drop forging work, as well as work requiring a standard guide hammer. The anvil block holding the lower die is an integral part of the main frame casting, which is of open-hearth steel. The slides, which are through bolted to this main casting, have rigid connection with the frame and the upper and lower dies maintain perfect alignment, even when repeated blows are struck. This enables these hammers to be used with formed dies. The hammer is double-acting and perfect control is maintained by the operator for work requiring hand operation or continuously sustained automatic action may be obtained with close regulation by the throttle valve through the treadle connection.

As stated above, the main frame is an open-hearth steel casting. The bedplate is flush on the bottom, and extending up from it is a square-shaped anvil block with a dovetail slot in it to which is keyed the lower die. The dies are placed at an angle of 45 degrees with the main frame, enabling long work to clear the column on both sides of the die. The column is of I-section and extends up to the projecting flange to which the cylinder is bolted. The main casting is reinforced by a thick cross web at the lower end of the part to which the slides are bolted. The cylinder casting is in one piece with piston and throttle valve chests, and it has extra heavy flanges, top and bottom, the latter being reinforced by vertical ribs.

The hammer head is of steel set at an angle of 45 degrees with the frame. It is finished from the solid and has milled V-grooves bearing on guides on the frame. The guides are adjusted by taper gibs to take up wear between them and the hammer head.

This hammer is made in five sizes, ranging in weight of falling parts from 100 to 300 pounds, respectively. Cylinder diameters range from 4¼ to 5¼ inches with a length of stroke of 14 and 16 inches, respectively. The total height of the hammer ranges from 7 feet 3 inches to 8 feet ½-inch and the largest size requires a floor space of 2 feet 1 inch by 3 feet 6 inches.

A STEEL DRILLING DERRICK.

The accompanying illustrations show a sectional, collapsible steel drilling derrick of standard dimensions. This derrick is the invention of John S. Hines, of Portland, Ind., and the Hines Mfg. Co., of the same town, has been formed to manufacture it. The derrick is built completely of structural sections, and for convenience in erecting and dismantling is assembled in four parts, which are put together on the ground and hoisted into place by means of

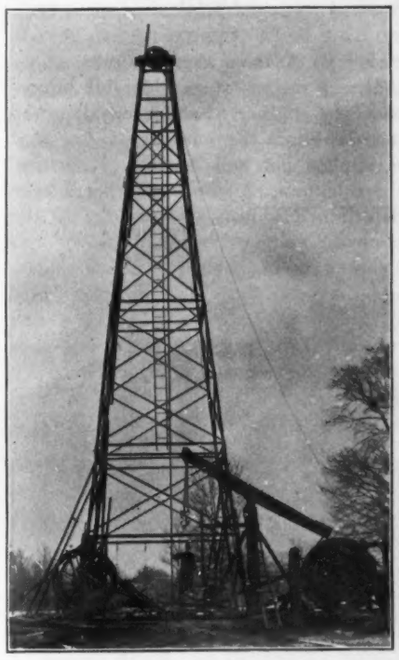


FIG. 1—HINES SECTIONAL STEEL DERRICK COMPLETE. 20 FEET SQUARE AT BOTTOM, 4 FEET SQUARE AT TOP, 72 FEET IN HEIGHT.

the power which is used for drilling. The first section is built at the location where it is desired to drill and the second, third and fourth sections, in their order, are drawn up the back of the first and succeeding sections already erected until the hinges at the back engage automatically. By means of a tilting bar device, the section in suspension is turned over by tightening up on the wire rope which passes from the end of the tilting bar through a pulley on the opposite side of the derrick to the spindle on the bull wheel. When the section is over the balancing point, the brake is applied to the bull wheel, and the section lowers itself until it rests upon the last section in place where it is locked. In dismantling the operation of erection is reversed. Top and bottom corner castings hold

the legs of the sections securely. The sections are collapsible and when the derrick is packed for shipment, it requires but little space. The illustrations show the derrick erected complete in Fig. 1, while Figs. 2, 3 and 4 show various phases of the operation of adding the top section. The advantages claimed for this derrick are its safety from fire and its ease of erection and the elimination of skilled labor in putting it together.

THE TESTING OF GALVANIZED IRON.

By Sherard Cowper-Coles.

It is a matter of considerable importance to engineers who use galvanized iron to know the amount of zinc that is applied per square foot of surface; the thickness of zinc has hitherto been determined almost universally by the copper sulphate test, known as Preece's test, which consists in placing the galvanized iron in a saturated solution of copper sulphate for one minute and continuing the immersions until it shows a red deposit of copper, which is a true indication that the zinc has been penetrated and the iron exposed. This test, when carefully carried out, is fairly reliable as regards hot galvanized iron but it is found quite useless for the more recent forms of galvanizing which are now being extensively used, namely, electro-galvanizing and sherardizing,[1] for the following reasons:

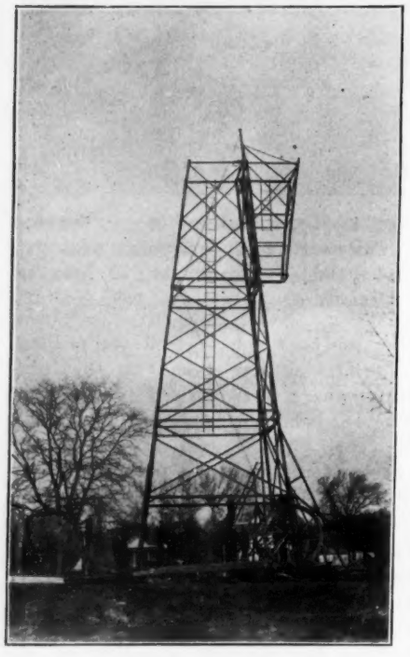


Fig. 2—Fourth Section Ready to be Turned Over Into Position.

On applying Preece's test to sherardized and hot galvanized articles coated with an equal thickness of zinc, the former requires from three to four times the number of immersions which suffice to remove the zinc from the latter. When hot galvanized articles are placed in a saturated solution of copper sulphate the copper is precipitated in a loose form, but when sherardized, cowperized or electro-zinced articles are similarly treated the copper adheres firmly to the zinc and no fresh surface is exposed, apparently due to the deposit of zinc applied by the above named processes having a fine matted surface.

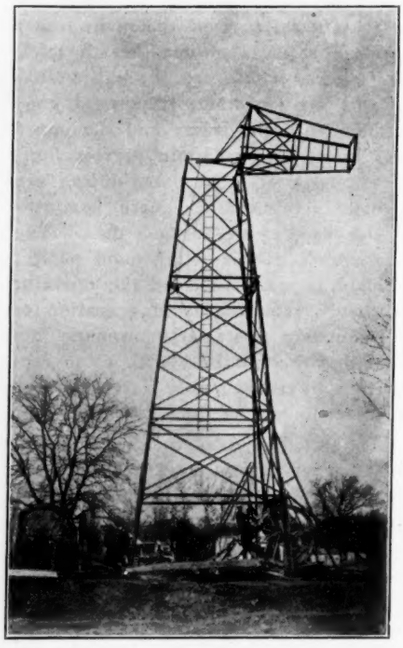


Fig. 3—Fourth Section Being Turned Into Position. The Brake will Hold It in Any Position.

It would appear from these observations that the apparently great resistance to corrosion of sherardized iron when subjected to Preece's test is due to the protection of the zinc by the deposited copper, so experiments were made with a solution of ferric sulphate, which dissolves zinc without forming a precipitate on the zinc coating. To test this, known areas of sherardized and hot galvanized plate were exposed to the action of ferric-sulphate solution for an equal period and the amount of ferrous salt formed by the reducing action of the zinc determined. The column headed, "Weight of Zinc Dissolved" shows the relative corrosion:

Nos.	Samples.	Zinc Per Square Foot, Grams.	Weight of Zinc Dissolved, Grams.
1.	Sherardized.	26.908	0,080
2.	Sherardized.	26.908	0.074
3.	Sherardized.	22.930	0.057
4.	Hot Galvanized.	22.120	0.058
5.	Sherardized.	31.116	0.034

Sample No. 2 was moistened with water and allowed to dry. The oxide formed appears to protect the zinc and this protection is more marked if water is allowed to act for a longer period than was permissible in these experiments. It will be noticed that samples 1 and 2, which had a thinner coating than samples 3 and 4, dissolved to a greater extent than samples 3 and 4, which had practically the same weight of zinc coating dissolved; sample 5 was sherardized copper and although the zinc coating was the heaviest, yet the corrosion was in this case the least, probably due to the conversion of the greater portion of the zinc into brass. On testing this sample with copper sulphate solution, as in the other cases, instead of a brown precipitate of copper, a bright metallic deposit was obtained and no further action seemed to occur.

From the results of experiments, the copper and sulphate test has been found to be quite unsuitable for testing electro-zinced, sherardized or cowperized surfaces, therefore it will be necessary in future to substitute some other test, such as the ferric sulphate test or a modification of the copper sulphate test.

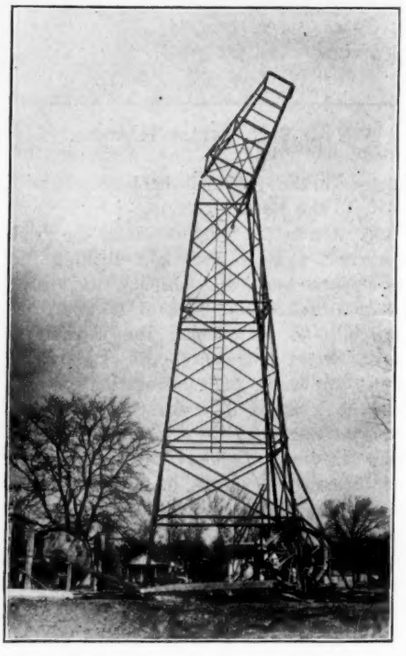
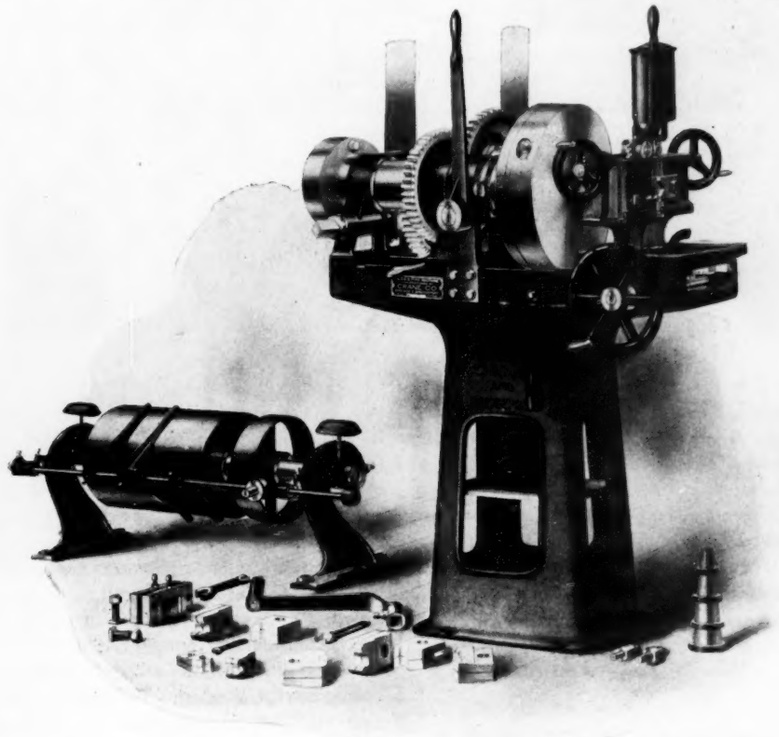


Fig. 4—Fourth Section Over the Balance. Held by the Brake.

[1]See The Iron Trade Review, Feb. 15, 1906.

A NEW CRANE PIPE MACHINE.

The accompanying illustration shows a new pipe machine, with a capacity of from ⅛ to 2 inches, recently placed on the market by Crane Co., Chicago. The machine is designed to be operated by either hand or power and all parts are designed to withstand any strains that such a pipe cutting and threading machine may be subjected to. Many features have been included to increase output and facilitate ease of operation, and the gripping, threading, cutting-off and adjustment have been so arranged that no unnecessary operations are required.



NEW CRANE CO. PIPE MACHINE.

The frame is a single casting with the bed and stand in one piece, giving a maximum of rigidity with minimum weight and floor space. The die head is bolted to a movable carriage, with ample travel, and carries the dies, pipe guides and cutting-off tools. The dies are of the improved adjustable type, collapsible, and are similar to those supplied to Crane hand die stocks. They are carried in suitable frames sliding in guides. The frames are moved by a handwheel-operated screw and the dies are set to gage by a locking device which allows any number of pieces of pipe of the same size to be threaded without further adjustment. Four cutting edges are provided on the dies, which will give good service on either steel or wrought iron pipe. The dies are made interchangeable and one die of a set may be replaced, if broken, tending to reduce the repair bill. The dies when not in use on the machine may be used in the hand stock and changes in the size of the dies may be made in a few seconds.

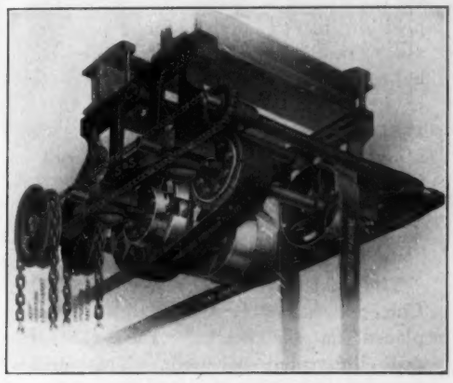
In cutting off operations the pipe is guided by two steel guides, hardened on the face. These are operated by a right and left hand screw and a hand-wheel. The cutting-off tool is operated by a lever and rack, making a rapid and positive device of great power. The gripping chuck is of the quick acting type and the pipe may be released and gripped by throwing a lever without stopping the machine. The chuck is adjustable to different sizes of pipe within the range of the machine without moving or altering the jaws, which are of tool steel carried in steel holders and removable for grinding or replacing.

The rear end of the spindle contains a universal centering chuck of compact design and of easy adjustment. Oil is supplied by a small tank supported on a swivel joint above the die head. A second small tank is placed in the frame to which oil from the dies returns. The supply is controlled by a pet cock.

But one driving pulley is necessary. Three changes of speed are obtained by gearing shifted by a lever placed on the frame. This device is positive and cannot get out of order. The necessary crank for hand operation is supplied. When desired, bolt dies from ¼ to 1½-inch are furnished and the equipment includes all necessary pipe gage blanks, wrenches, etc. The floor space required by the machine is 44 x 23 inches and its weight is 200 pounds.

THE S. & S. VARIABLE SPEED COUNTERSHAFT.

The accompanying illustration shows the S. & S. variable speed countershaft, which consists of an arrangement of expanding belt operating pulleys, by means of which any variable speed relationship desired within the limits of 4:1 can be maintained at its maximum. The device is capable of ready adjustment in a minimum of time. This mechanism is made in 14 standard sizes, capable of transmitting up to 128 horsepower.



THE S. & S. VARIABLE SPEED COUNTERSHAFT.

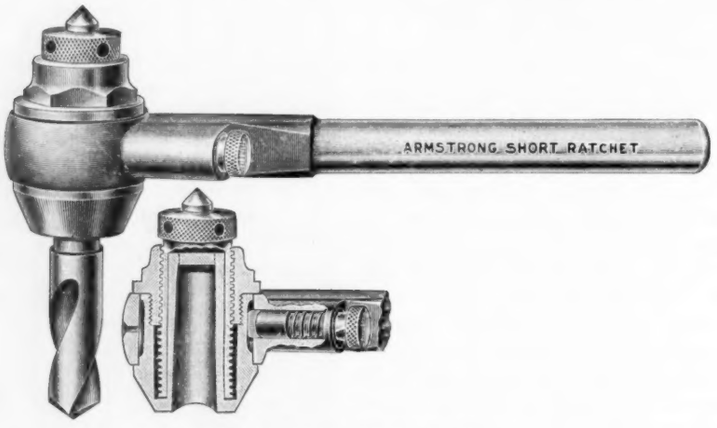
The variation in the diameter of the expansion pulley is effected as follows: The rim of the pulley is divided into 12 sections, two spokes being riveted to each section. The spokes slide in machined slots inside a cast iron hub. Part of each spoke inside the boss has teeth milled on one edge and all spokes are in mesh with a broad pinion. The pinion is operated by an inner shaft capable of longitudinal movement only. Owing to grooves milled on one end of this inner shaft, any movement given to it rotates the pinion inside the hub, drawing the spokes or forcing them out, depending upon the direction of motion of the hand wheel, which operates the inner shafts simultaneously.

The manufacturer makes the following claims in regard to the device. It will transmit any amount of power

and vary the speed at a ratio approximately 4:1, with but little more waste than would be found in two ordinary shafts running in parallel. The expansion pulleys make possible an efficient short drive, their construction being such that the sag and elasticity of the belt need not be considered. No expensive special belts are necessary and all pulleys are situated between bearings, economizing in space and insuring the working strains being normal, thus tending to prolong the life of the mechanism. The mechanism is adapted to mounting on girders, ceilings, walls or floors. The machines for floor positions and the larger sizes are ring oiling. The gear is substantially designed and perfectly adjustable and requires a minimum amount of space consistent with the amount of power. The hand-wheel for operation may be placed in the position most suitable for the operator's requirements. The device can be operated with equal facility whether in operation or stationary. It is manufactured by the Rotary File & Machine Co., 589 Kent avenue, Brooklyn, N. Y.

THE ARMSTRONG SHORT RATCHET DRILL.

The Armstrong Bros. Tool Co., Chicago, has recently designed and placed on the market the ratchet drill illustrated herewith. This drill has been devised for use in places where the height is limited and it is claimed that none of the good features of the common ratchet drill, such as length of feed, strength and simplicity has been sacrificed. The spindle and drill socket are made in one piece, the spindle being deeply recessed to receive the hollow feed screw. The telescoping of the feed screw over the drill socket to secure a short and compact drill, without shortening the feed screw, is the principal feature of the tool and enables the operator to drill in otherwise inaccessible places.



THE ARMSTRONG SHORT RATCHET.

The drill can be reversed instantly and is designed to withstand rough usage. The handle and head are made in a single piece, being drop forged. The pawl and center are of tool steel and tempered. All other parts are turned from bar steel and hardened.

Three styles of spindles are furnished. Style A takes drills with No. 1 taper square shank, style E spindle takes drills with No. 2 taper square shank and style R takes drills with No. 3 Morse taper shank. Steel sleeves and sockets can be furnished to fit style R spindle to take smaller size Morse taper drills or taper square drills. The different sizes of spindles are interchangeable.

The Colonial Iron Co., Riddlesburg, Pa., resumed operations on June 1, after being shut down since Feb. 16.

THE MILWAUKEE 16-INCH ENGINE LATHE.

The accompanying illustrations show an improved 16-inch plain engine lathe built by the Milwaukee Machine Tool Co., Milwaukee. The machine was designed principally to meet the demand for a lathe of great durability and power and high cutting speed. It is of extra heavy design and differs from the ordinary plain lathe in having a quick change attachment for all feeds. Four changes of belt driven feeds and one feed taken from the lead screw when a coarser range of positive feeds is required are provided. These are driven by a wide belt mounted on two single faced pulleys provided with a belt tightener conveniently located. For thread cutting the different pitches are obtained by change gears, which also produces a change of the positive feed when engaged with the lead screw.

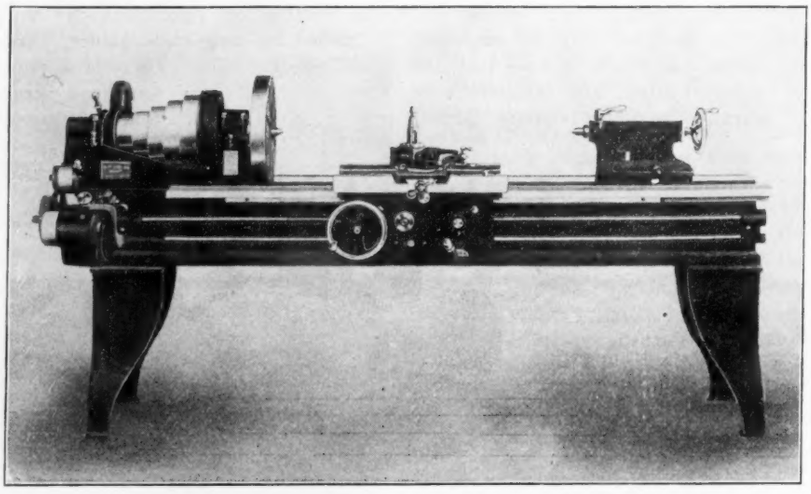


FIG. 1—MILWAUKEE 16-INCH ENGINE LATHE.

The apron is fitted with a clutch for the longitudinal traverse, and a sliding lock for the cross feed. A reverse is provided in the apron and a safety lock for the half nut. All handles have been so placed as to be most convenient for the operator.

The bed has unusual depth and is of heavy pattern. It is strongly reinforced with heavy cross ties. The head and tailstocks are fitted to large V-bearings in the rear and a flat bearing on the front. Two large oil reservoirs are located underneath the spindle in the headstock and oil is supplied to the bearings by a wick. The tailstock is designed and constructed so as to leave ample clearance for the compound rest when used for angular feeds. The carriage is fitted to the bed by a large V-bearing in the front, and is provided with a wide

cross slide and compound rest. This machine is built only in the one size 16-inch, and can be furnished with any length of bed from 6 feet to 16 inches. The main spindle bearings are of phorphor bronze, the main bearing being 3 3/16 inches x 5 inches long. The spindle is provided with a 1 9/16-inch hole throughout its entire length. It is of high carbon crucible steel cut from the solid and is accurately

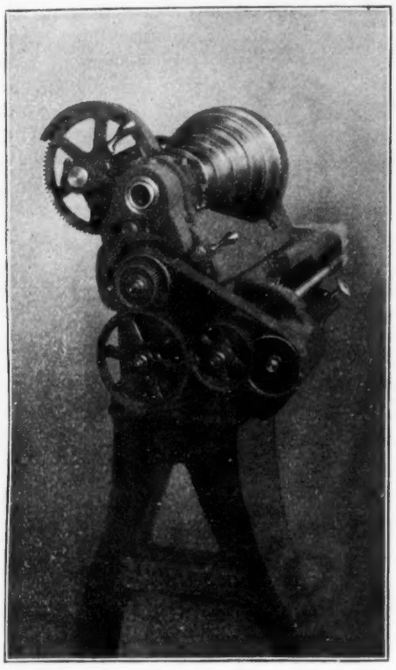


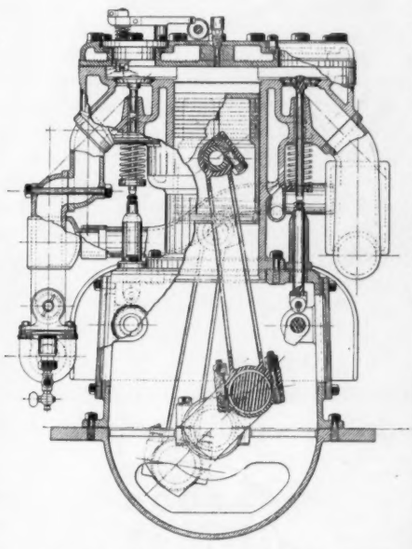
FIG. 2—FEED GEARS ON MILWAUKEE LATHE.

ground. The cone pulley will take a 2¼-inch belt and has a diameter of 11 inches on the largest step. All important gears and pinions are cut from the solid. The net weight of the machine with an 8-foot bed is, approximately, 2,500 pounds.

AN ECONOMICAL KEROSENE ENGINE INSTALLATION.

The Grand Rapids Gas Engine & Yacht Co., Grand Rapids, Mich., builder of kerosene motors for marine purposes, has adapted one of its standard three cylinder engines of the type shown in the accompanying illustration to the driving of its shop with unusually economical results. The changes in the engine required to fit it for stationary duty involved only the extending of the main shaft and substituting on it a pulley for the coupling shown. The engine used has an 8-inch bore and 10-inch stroke.

From the engine a 200-foot line shaft is driven. Taking power from this shaft are 29 iron working and six wood-working tools with their several countershafts. The engine is started with gasoline and operated on kerosene and a daily record is kept of the amount of each used. One



GRAND RAPIDS KEROSENE ENGINE.

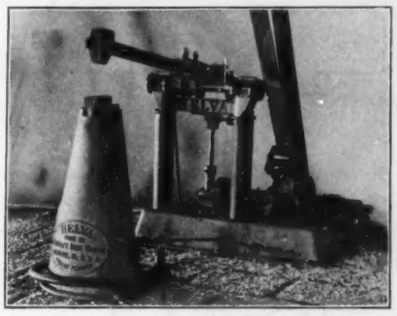
record taken for 50 hours' continuous service shows a consumption of 118 gallons of kerosene and four gallons of gasoline or an average of 2.44 gallons per hour. The cost of the kerosine is 6½ cents per gallon, making the approximate fuel cost per hour allowing for the gasoline about 15½ cents, or $1.55 for a day of 10 hours. The attendance required does not exceed an hour a day and has to do only with the fuel supply.

A NEW HELVE HAMMER.

The accompanying illustration shows a new power hammer of the helve type manufactured by the Novelty Iron Works, Dubuque, Ia. The hammer is simple in construction and made entirely of metal. The helve is formed of two parallel bars of machine steel and is so constructed as to admit of using a double die, one end of which may be used for plow work and the other for general forge work, including welding and drawing out. The die is fastened in the helve without a key, being entirely enclosed with the helve bars and bolts.

The machine is stopped, started and controlled by means of a foot lever which engages with a combination tigtener and brake lever. When the hammer is at rest, the belt runs loosely over the tightener and the drive pulley. When it is desired to forge, a slight pressure of the foot lever releases the brake, and, at the same time engages the tightener pulley with the belt. When the tightener is brought against the belt with considerable pressure, the hammer strikes a hard blow, and light striking may be obtained for finishing or light welding by a slight pressure on the lever, which allows the belt to slip upon the drive pulley, but with sufficient contact to drive the helve slowly.

The machine has a capacity of forging material 5 inches thick, and may be adjusted to forge thick material by means of a telescoping pitman. This adjustment may also be used when it is desired to strike lightly at full speed. No adjustment is neces-



ALL METAL HELVE HAMMER.

sary for light forging at reduced speed, this being accomplished by means of the foot lever.

A COMPOUND PRESSURE BLOWER.

The fact that the pressure at which air is delivered by a centrifugal fan is determined by the peripheral speed of the blast wheel, has prevented manufacturers of these fans from connecting these larger sizes direct to electric motors, since the speed of the larger motor is limited. In the past it has been necessary to use belted outfits where a pressure of over 6 or 8 ounces was required. The belted machines require more floor space, more attention to bearings, and are also less efficient than the direct connected outfits.

The Buffalo Forge Co., Buffalo, has designed a compound blower which will deliver the air at double the pressure of the simple fan with the same diameter blast wheel, when run at the same speed. This permits blowers of practical and efficient proportions for direct connection to large motors, of 50 and 75 horsepower. The blast wheels are mounted on a single shaft and incased in a cast iron housing, built up in transverse sections, permitting the interior parts to be easily inspected or removed. The wheels

are of a special design, the arms being secured to the hub tangentially, instead of radially, the usual practice. This eliminates the necessity of bending the T irons through a large angle, which in addition to weakening the wheel, offers more resistance to the flow of air.

A single inlet is provided on the side opposite the motor. Being unobstructed, a smaller inlet for air is permissible. The advantage of this is apparent. The air entering the fan does not strike that portion of the blade which is moving at a high velocity until the direction of the air has changed and the air itself has attained a high velocity. The curvature of the blade is such that the velocity of the air is gradually increased as it approaches the tip, at which point the velocity of the air is slightly above that of the blade. The air from the first stage is discharged into a pressure chamber about the entire circumference of the wheel, the pressure in this chamber being approximately one-half the total pressure at which the air is delivered. Here the air enters the second stage, the blast wheel of which is the same as in the first. The scroll in this stage is involute in form and so designed as to increase the area in the casing directly as the increase in volume of air discharged from the blast wheel throughout a single revolution. Substantial oil ring bearings are provided, one on each side of the housing as shown in the drawings, and when the width of the blower is sufficient to require such, another bearing is located in the pressure chamber between the two stages.

A number of these fans of the larger sizes have been installed by the Lehigh Valley railroad, Fanner Mfg. Co., Strong, Carlisle & Hammond Co., and the Indiana Steel Co., of Gary, Ind.

Two of these fans are now being constructed for the latter to supply blast to cupolas at a pressure of 16 ounces per square inch. Each fan will deliver a maximum of 9,500 cubic feet of air per minute at a speed of 1,420 revolutions per minute. They will be driven by a 75-horsepower General Electric 3-phase, 440-volt, 25-cycle induction motor.

These blowers of the above capacity with the motor mounted on a cast bed-plate occupy a floor space of only 7 by 5 feet and the height is about 7 feet, which would be the same as a simple blower of this capacity delivering the air at one-half the pressure. The blowers are equipped with a flexible coupling designed by the Buffalo Forge Co., which, in addition to being flexible, acts as an insulator between the motor and the blower. There is no metal contact, the torque being transmitted through solid rubber cylinders bedded in machined grooves in each half of the coupling.

These blowers are made in all sizes up to capacities of 12,000 cubic feet of air per minute, at any pressure up to 24 ounces per square inch.

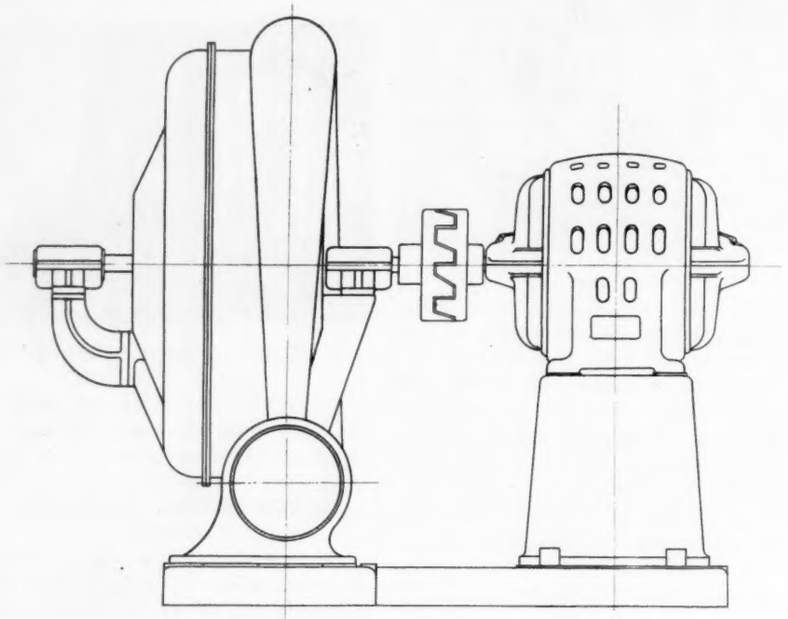


FIG. 1—BUFFALO COMPOUND PRESSURE BLOWER.

THE BUCKEYE FOUR-CYCLE GAS ENGINE.

The accompanying illustrations show a new four-cycle gas engine which has just been designed and placed on the market by the Buckeye Engine Co., Salem, O. The two fundamental principles governing the design of this engine are utility and simplicity. The admission valves are placed on the top of the cylinder and the exhaust valves on the bottom, allowing ready drainage of oil and other deposits directly through the exhaust valve. Another reason for this placement was that it was found in practice to be wise to have the exhaust and admission valves widely separated. This is on account of the fact that where both valves enter into the same space a fresh charge entering the cylinder from the chamber surrounding the exhaust valve is heated and thus tends to decrease the weight of the charge and reduce the power of the charge. The cylinder adopted is symmetrical and well balanced. On the larger sizes of engines the cylinders are made in halves, bolted together in the center, but in smaller sizes they are made in one casing. The working barrel is continuous from end to end, but the water jacket is provided with an opening around the circumference to permit of free expansion and contraction. This opening is closed by means of a cast iron band drawn tightly around the cylinder.

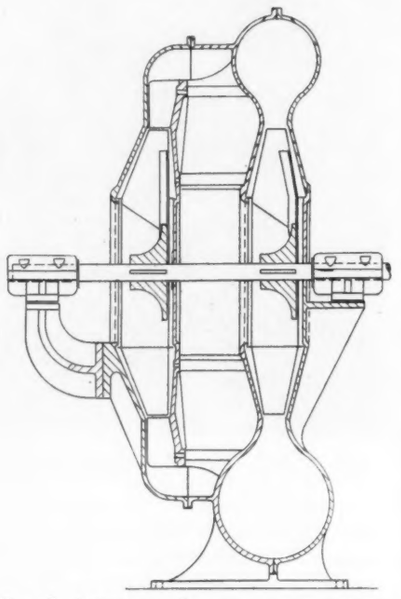


FIG. 2—INTERNAL CONSTRUCTION OF BUFFALO COMPOUND PRESSURE BLOWER.

The main frame is thoroughly anchored to the foundation. The rest of the machine, however, is free to slide on fixed guides on cast iron pieces. These are

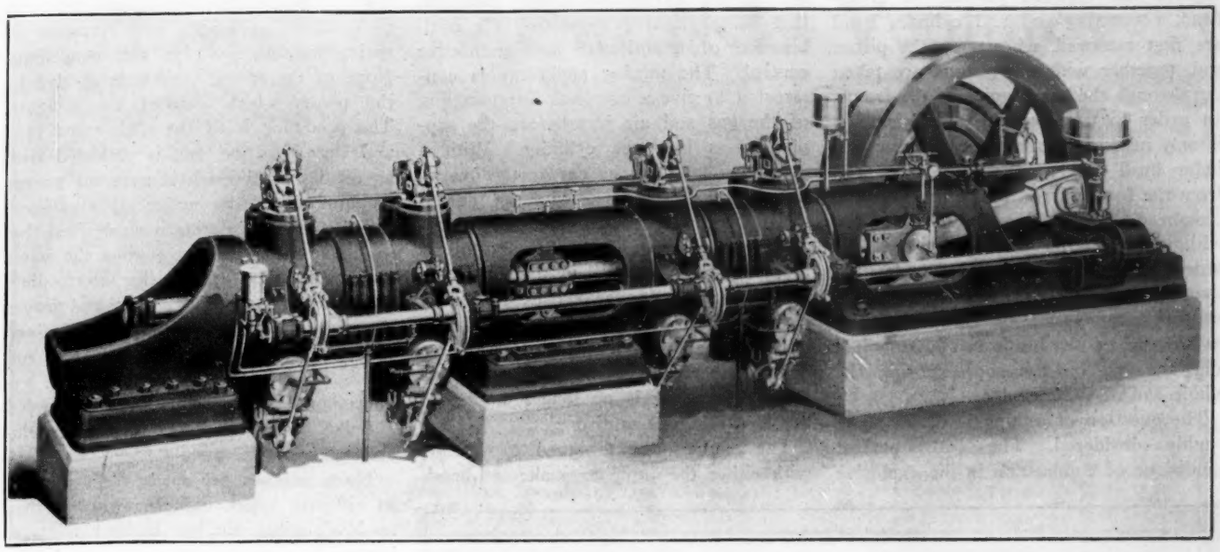


FIG. 1—THE BUCKEYE TANDEM DOUBLE ACTING GAS ENGINE.

shown under the center distance piece and the rear stub in Fig. 1. The bed plate is of the bored guide type and is plain and massive in construction. The main bearing is of the babbitted quarter-box type with a convenient wedge adjustment and has sufficient bearing surface to keep the journal pressure within safe limits.

The crosshead is a steel casting threaded to receive the piston rod. It is split and clamped on the rod by means of through bolts. The shoes are steel castings and have a swivel connection to the body of the crosshead and are adjusted for wear by accessible bolts securely clamped after adjustment. The swivel crosshead has been adopted to prevent wear on the crosshead shoes due to the deflection of the piston rod supporting a heavy piston. The intermediate crosshead has the same swivel shoe connection as the main crosshead as has also the tail rod crosshead.

The pistons are floated in the cylinders and are made appreciably smaller than the working barrel. They are carried entirely by the crossheads, which insures a uniform and circular bore of the barrel indefinitely. On the double acting tandem engines the piston rods are made in two sections joined together by means of the intermediate crosshead.

The connecting rods are forged open-hearth heavy steel. In double acting engines the rod is solid at both ends and has brass boxes at the crosshead end with wedge take up. The crank pin end has the boxes babbitted and provided with wedge adjustments. In single acting engines the crosshead end is solid, but the crank pin end is of the marine type with babbitted boxes. These engines are made of the side crank type with the crank discs of the fan-tail type. These are solid steel and properly counterweighted to balance the weight of the reciprocating parts.

The exhaust valves are of the poppet type water cooled internally and means are provided for oiling the valve stems continuously. Each pair of admission and exhaust valves is driven by a single eccentric which is clamped to the lay shaft. They are turned spherically on the periphery and are adjusted by means of a clamped joint. This adjustment required no shiming. The rods connecting the eccentrics and valve rockers are provided with right and left hand clamping nuts. This gear is noiseless in operation at all speeds. The lay shaft is placed in the horizontal plane passing through the center of the engine and is driven by a set of steel gears. One of these is mounted on the drag shaft rotated on the main crank pin through a universal joint. This construction insures smooth running even if the main crank shaft and drag shaft are not in perfect alignment. The drag shaft carries a bevel gear meshing with a pinion on the governor spindle.

The question of accessibility has been thoroughly considered from the standpoint of the operating engineer. In the double acting tandem engine the main crosshead, connecting rod, forward piston rod and pistons are removed from the front end of the engine. In order to

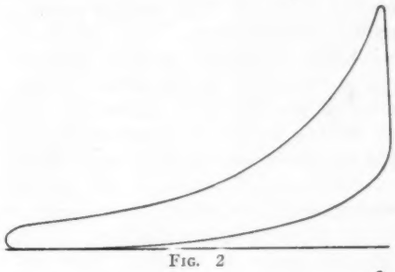


FIG. 2

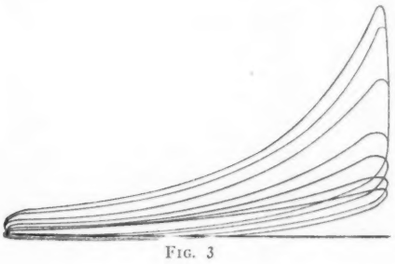


FIG. 3

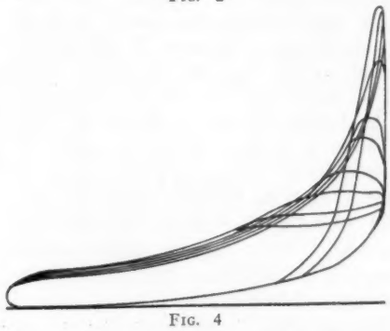


FIG. 4

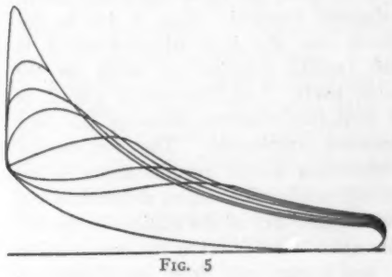


FIG. 5

TYPICAL INDICATOR CARDS, BUCKEYE GAS ENGINE.

remove the forward piston, the crosshead, connecting rod and cylinder head are first removed, whereupon the piston rod, together with the pistons are taken out through the bored guide of the frame. In order to take out the rear piston it is only necessary to remove the rear cylinder head and uncouple the rear rod from the forward rod at the intermediate crosshead. All valves are removable without interfering with any piping. In order to clean and inspect the combustion chamber it is only necessary to remove either the admission or exhaust valves, or any one of the heads can be unbolted and slid out on the rod exposing the whole end of the cylinder.

The question of mixing has been thoroughly considered. The ideally perfect conditions of combustion in the explosive type of internal combustion engine require the flame to propagate instantly throughout the combustion chamber and that the chemical reaction should be complete. This would give a firing line on the indicator diagram which would be vertical and which would come to a distinct point at the upper edge showing expansion to begin with the engine at a dead center. In practical working, however, the heat of combustion with such a diagram would rapidly be conducted through the metal of the combustion chamber and carried off by the jacket water, and it has been found that the best thermal economy is obtained when the firing line slopes about 5 degrees forward. This is due to the reason that the heat of combustion is then rapidly absorbed as work on the piston itself. The illustration, Fig. 2, is an indicator diagram showing the best operating conditions. The amount of compression within certain limits in an internal combustion engine determines the thermal efficiency of the engine. In the engine under consideration the compression is nearly uniform from maximum to about one-fourth load. From about one-fourth full load down to friction load, the ingoing charges are slightly throttled, that is, the mixing apparatus is a combination of quantitative and qualitative control. The mixing apparatus is constructed to give a complete intermingling of the gas and air just before the supply passes into the cylinder. With a maximum load on the engine the quality of mixture is such as to give the highest mean effective pressure, together with a maximum amount of volume and maximum compression. When the load falls off the mixing apparatus automatically weakens the charge by admitting less gas until the load on the engine decreases to about 25 per cent of maximum. At this point the charge is no longer weakened but is varied in quantity.

The engines are designed to operate with either the jump or make-and-break spark. The double acting engines are provided with two or more igniters in each combustion chamber and can be operated with both high and low tension ignition simultaneously. The circuit is periodically completed, and the time of ignition controlled by the timer. This device is provided with automatic control directly by the governor depending upon the power developed at any instant, and with hand adjustment on all igniters simultaneously. In addition each igniter may be adjusted independently by hand, while the engine is running. The diagram, Fig. 3, shows the results obtained by this system of ignition. It will be observed that all diagrams are nearly vertical on the firing end with all gradations of load from friction to maximum. Fig. 4 shows a diagram from an engine at normal speed during the advancement of ignition until the firing was too early and later retarding it until the ignition was too late. This diagram illustrates the simplicity of adjusting the igniters with the engine in operation.

The governor is mounted directly on the gear box between the lay shaft and the main crank and is driven by the drag shaft. The construction is such that any combination of length and diameter of spring may be used to suit conditions. None of the spring tension is carried by the pivots which support the weights. The governor is of the high speed type and very sensitive, and is provided with an oil dash-pot which secures the proper amount of stability under all conditions.

The water circulation is so devised that in double acting tandem engines the water enters the rods through the intermediate crosshead, the stream divides and leaves the rods at opposite ends, and is drained through slots in the bed and rear end stubs. Each cylinder, cylinder head, exhaust bonnet and exhaust valve is cooled and has its own independent water circulation.

These engines are made in a number of different types, namely, double acting tandem engines, single cylinder single acting engines, and single cylinder double acting engines, single acting tandem engines with trunk piston and crosshead, single acting tandem engine with bored guide crosshead. These engines are so rated that 10 per cent overload may be carried continuously, that is, an engine rated at 100 brake horsepower will develop 110 horsepower. The double acting tandem engines are built in sizes ranging from 250 to 3,000 brake horsepower and the single acting engines in sizes up to 300 horsepower. Some of the various types are illustrated in the accompanying illustrations.

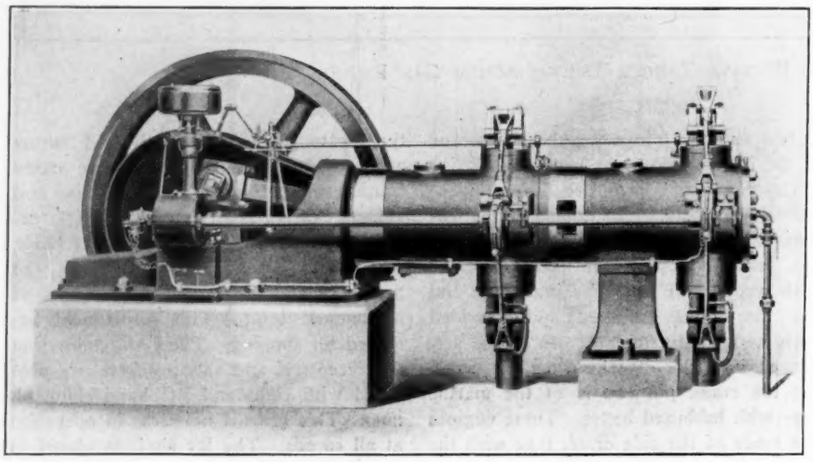


FIG. 6—FOUR CYCLE TANDEM SINGLE ACTING BUCKEYE GAS ENGINE.

Cast Steel Mooring Posts.—Mooring posts of cast steel instead of cast iron, as ordinarily employed, is the innovation to be made at the new Chelsea piers in New York City, which are being fitted up for the accommodation of extremely large vessels. This change was made as the result of the Mauretania breaking away from its moorings some time ago. The new posts will follow the type now in use on the North German Lloyd piers, being about 4 feet in height, hollow, and carrying two prongs. Contracts have been let to J. E. Ogden, 147 Cedar street, New York, for 80 of these posts at a total cost of $4,786.

The American Brass & Specialty Co., Columbus, O., has removed its plant from 183 West Maple street to the new plant at 188 Gay street, preparatory to manufacturing such articles as were formerly turned out by the American Auto Brass Co., including auto and boat lamps, generators, whistles, mufflers, etc., in addition to the manufacture of art brass goods. The company advises that it intends to increase its plant in the way of machinery to facilitate the increased output.

Investors Shy at New Ventures

The market opened active and strong Monday, sales exceeding the 1,000,000 share point, and prices closed high. Tuesday, the announcement of a cut in steel bars apparently did not affect the stock market. Prices opened strong, but fell sharply and then recovered. The bar iron price cut Wednesday was followed Thursday by a stock market less active and irregular, finally closing weak and lower. Extreme dullness Friday, with the closing firm and high, was followed Saturday by another dull market that also closed strong.

Gold to the amount of $1,250,000 engaged for export Monday was the only export of the metal reported for the week. Money market conditions in New York, as well as throughout Europe, showed every appearance of great ease. The Imperial Bank of Germany reduced its official rate from 5 to 4½ per cent. The open market rate of London declined to the lowest quotation in years. On Thursday, a New York banking house announced that it had bought $50,000,000 Union Pacific 100-year 4 per cent gold bonds. According to Chicago interests, there are said to be many applications for capital from new projects whose promoters seem to have little doubt will be successful; however, investors are not willing to go into them, even ventures offering as high as 10 per cent interest on the capital invested. This indicates that investors are still cautious, and that new projects may have to remain in the back ground until the extreme conservatism has been greatly modified. Business failures for the week ending June 4 numbered 225, the smallest total reported for any week since October last, compared with 263 the preceding week, and 155 in the like week of 1907.

The weekly bank statement Saturday did not come up to expectations aroused by early estimates. The state banks and trust companies reported an increase of $3,500,000 in cash and an increase of nearly $14,500,000 in loans and investments. The surplus of the clearing house banks now stands at $47,192,200, against $5,980,525 a year ago, and $7,162,050 two years ago. The actual loans of clearing house banks decreased $7,662,700, and the deposits decreased $5,183,500. The percentage of actual reserve increased 0.71 per cent to 29.29 per cent. The weekly statement of non-member state banks and trust companies shows net deposits increased $19,881,900; and the percentage of reserve decreased 0.2 per cent to 33.2 per cent. The number of shares dealt in during the week was 4,103,585, compared with 3,547,650 last week, and 3,207,540 the corresponding week last year. The sale of bonds, exclusive of railway bonds for the week, amounted to $14,674,000, compared with $12,948,000 last week and $5,575,000 the corresponding week last year.

Copper Stocks.

New York.—Amalgamated Copper closed 67⅛, a net gain of 2⅜.

Boston.—Butte Coalition closed 23¾, no change; Calumet & Hecla closed 675, a net gain of 3; Calumet & Arizona closed 107½, a net loss of 7¾; Quincy Mining closed 85, a net gain of 2.

Financial Notes.

The American Car & Foundry Co. has declared a quarterly dividend of ½ of 1 per cent on the common stock, and the regular quarterly dividend of 1¾ per cent on the preferred both payable July 1. The previous common stock dividend was 1 per cent, declared last March. The directors of the Calumet & Arizona Mining Co. have declared the quarterly dividend of $1 per share; the Canadian Westinghouse Co., Ltd., the regular quarterly dividend of 1½ per cent, payable July 10; the Ingersoll-Rand Co., the regular semi-annual dividend of 3 per cent on the preferred stock, payable July 1.

THE LEADING INDUSTRIAL SECURITIES.

	Closing Quo. June 6	Changes in Week	Date 1908 Ann. M't'g	Stock Outstanding	Dividend		
					Basis	Last Declared	Date Last Div. Pay.
Allis-Chalmers	9½	+ ⅛	Sept. 3	19,820,000			
Allis-Chalmers pr	26⅛	+1⅜		16,150,000	7 cum	1¾ Q.	Feb., 1904
American Can	5	..	Feb. 3	41,233,300			
Am. Can pr	55½	+1		41,233,300	7 cum	1¼ Q.	April, 1908
Am. Car & Foundry	84¾	−1⅛	June 25	30,000,000		1 Q.	April, 1908
Am. Car & Fdy. pr	98	+1		30,000,000	7 n. c.	1¾ Q.	April, 1908
American Loc	50	+1½	Oct. 20	25,000,000	5	1¼ Q.	May, 1908
American Loc. pr	102½	− ½		25,000,000	7 cum	1¾ Q.	April, 1908
American Ship	43	−2	Oct. 14	7,600,000	4	1 Q.	June, 1908
American Ship pr	100⅝	+ ½		7,900,000	7 n. c	1¼ Q.	April, 1908
Am. Steel Foundries	6	− ⅜	Oct. 6	15,810,000			
Am. Steel Foundries pr	35	+1		17,240,000	6 cum	2½	Aug., 1904
Barney & Smith	50	.....	June 2	2,000,000	4	1 Q.	Sept., 1907
Barney & Smith pr	100	.....		2,500,000	8 cum	2 Q.	June, 1908
Bethlehem Steel	15⅛	+ ⅛	April 7	14,862,000			
Bethlehem Steel pr	42¾	+2¾		14,908,000	7 n. c.	¾ Q.	Feb., 1907
Cambria Steel	31	+ ¼	March 17	45,000,000*	6	1½ S. A.	Feb., 1908
Cambria Iron	45	.....		8,468,000*	4	2 S. A.	April, 1908
Chicago Pneumatic Tool	25½	− ⅛	Feb. 17	6,145,800	4	1 Q.	Oct., 1907
Colorado Fuel	27¾	+1¼	Oct. 19	34,235,500		3½	April, 1902
Crucible Steel	5⅞	.....	Oct. 21	24,578,400			
Crucible Steel pr	42½	+2		24,436,500	7 cum	1 Q.	Dec., 1907
Empire Steel	8	.....	Feb. 26	1,254,770			
Empire Steel pr	45	+5		2,500,000	6 cum	3 S. A.	Jan., 1907
Fay & Egan	100	.....	Feb. 18	1,000,000	6	1¼ Q.	May, 1908
Fay & Egan pr	110			1,000,000	7 cum	1¾ Q.	May, 1908
General Electric	137	+3	May 12	65,167,400	8	2 Q.	April, 1908
Harbison-Walker	11	.....	Jan. 20	18,000,000		½	Oct., 1907
Harbison-Walker pr	67	− ½		9,600,000	6 cum	1½ Q.	April 1908
International Pump	24⅝	+2⅛	June 2	17,787,300		1	April, 1905
International Pump pr	77	+4⅛		13,835,000	6 cum	1½ Q.	May, 1908
Lackawanna Steel	34	.....	March 11	34,971,400			
Lake Sup. Corp	5	− ⅛	Oct. 7	40,000,000			
New York Air Brake	65	−1	June 18	8,012,500	8	2 Q.	Oct., 1907
Niles-Bement-Pond	130	.....	Feb. 5	8,500,000	6	1½ Q.	June, 1908
Niles-Bement-Pond pr	100	.....		2,000,000	6 cum	1½ Q.	May, 1908
Otis Elevator Co.	35	−1	March 16	6,156,600		1½ S. A.	April, 1908
Otis Elevator Co. pr	88	.....		5,449,500	6 n. c.	1½ Q.	April, 1908
Penn. Steel	60	.....	May 11	10,720,000			
Penn. Steel pr	97	.....		16,500,400	7 n. c.	3½ S. A.	May, 1908
Pittsburg Coal Co.	13⅜	+1⅜	Feb. 10	28,853,400			Nov., 1906
Pittsburg Coal Co. pr	42⅛	− ⅜		27,030,800	7 c.	1¾	April, 1905
Pressed Steel Car	28½	+1½	Feb. 19	12,500,000		3	Aug., 1904
Pressed Steel Car pr	83	−1¾		12,500,000	7 n. c.	1¾ Q.	May, 1908
Pullman	159	+ ⅛	Nov. 11	100,000,000	8	2 Q.	May, 1908
Railway Stl. Spring	37½	+ ½	March 5	13,500,000	4	2 S. A.	April, 1908
Railway Stl Spring pr	91	.....		13,500,000	7 cum	1¾ Q.	June, 1908
Rep. Iron & Steel	18	+ ⅛	Oct. 21	27,191,000			
Rep. Iron & Steel pr	69½	+1½		20,416,900	7 cum	1¾ Q.	April, 1908
Sloss-Sheffield	49¾	−1¾	March 11	10,000,000	5	1¼ Q.	Mar., 1908
Sloss-Sheffield pr	96	+1		6,700,000	7 n. c.	1¾ Q.	July, 1908
U. S. Pipe & Fdv.	27⅛	− ⅛	June 24	12,500,000	4	1 Q.	Dec., 1907
U. S. Pipe & Fdy pr	75	.....		12,500,000	7 n. c	1¾ Q.	June, 1908
U. S. Steel	38⅝	+1⅛	April 20	508,302,500	2 n. c.	½ Q.	June, 1908
U. S. Steel pr	102¾	+ ¾		360,281,100	7 cum	1¾ Q.	June, 1908
U. S. Steel 5's	96⅝	+ ⅜		463,798,000	5	5 A.	.....
Va. Iron, Coal & Coke	52½	+2½	Nov. 17	9,073,680			
WestinghouseElec	49	−1	June 24	23,933,200*	10	2½ Q.	Oct., 1907
WestinghouseAir Brake	99½	+1½	Oct. 6	11,000,000*		2½ Q.	April, 1908

Par value of shares, $100, except those starred (*), $50

NEWS FROM MANY INDUSTRIES

New Buyers:—

The Delaware Bridge & Iron Co., Delaware, O., has been incorporated with $25,000 capital stock by L. B. Denison, J. F. Denison, L. L. Denison and Bessie M. Quiston.

The Union Tool Co., Oleum, Contra Costa county, Cal., has been chartered by Lyman Stewart, W. C. Stuart, Edward Double, John Baker Jr., J. S. Torrance, A. W. Redman and others, with $1,200,000 capital stock.

Morris A. Liebert, Lewis J. Seleznick and Morris Koplan, of Brooklyn, N. Y., are directors of the Complete Horseshoe Co., of New York City. incorporated with $50,000 capital stock.

The Ubank Machinery Co., Dallas, Tex., has been chartered with a capital stock of $20,000. The incorporators are: Charles Ubank, Olin Brooks and D. N. Thatcher.

Articles of incorporation were filed by the Denton Woven Wire Fence Co., Denton, Tex., with a capital of $25,000. The incorporators are: M. S. Stout, G. H. Blewett, L. I. Fry and T. K. Blewett.

The Wooster Machine Co., Wooster, O., has been incorporated with $25,000 capital, by the following: E. E. Porter, Elmer S. Lands, J. E. Schultz, Nick Amster, E. O. Dix and Wesley Zaugg.

The Manitowoc Boiler Works Co., Manitowoc, Wis., has filed articles of incorporation through Elias Gunnell, Charles C. West, and L. E. Geer. The capital stock has been placed at $200,000.

The Maney Mfg. Co., East St. Louis, Ill., has been incorporated with a capital of $75,000. The company will manufacture farm implements, and has the following directors: J. W. Maney, Herbert C. Wells and John Maney.

The National Hardware Co., East St. Louis, Ill., with a capital of $25,000, has been incorporated to do a wholesale and retail hardware business. The incorporators are Milo R. Clanahan, Herman A. Kreibohm and William H. Green.

Central Steel Products Co., First National Bank building, Chicago, has been incorporated to manufacture steel products, with a capital of $25,000. The incorporators are: James B. Gascoigne, John F. Heuman and D. Riley McMaster.

The Northern Smelting & Mfg. Co., Milwaukee, Wis., has filed articles of incorporation, with a capitalization of $100,000. Those interested in the new enterprise are: Charles A. Bowker, R. N. Tufford and J. T. Leahy.

The Macksburg Tool Co., Macksburg, O., W. O. James, S. B. Longfellow, J. D. James, J. W. Atcher and C. S. Blakeslee, incorporators, has been granted a charter under the laws of Ohio. The company is capitalized at $15,000.

A charter has been granted the Enterprise Machine Co., Wilson, N. C., to buy and sell machinery, manufacture iron, operate a foundry, etc. B. G. Paschall, R. W. Gadd and W. A. Smith are the incorporators, and the capital stock is $25,000.

The Gas Power Engineering Co., Pittsburg, Pa., has been incorporated to engage in general engineering business, prepare plans and designs, etc., with a capital stock of $150,000. The incorporators are: James K. Lyons, James B. Hardie and J. A. Reed, all of Pittsburg, Pa.

Articles of incorporation were filed by the Rogan Foundry Co., Bessemer, Ala. The company is capitalized at $10,000, and will do a general foundry business. Its officers are W. W. Hollingsworth, president; E. A. Shelfer, vice president; and G. B. Hall, secretary and treasurer.

The trustees of Newton Falls, Trumbull county, O., have instructed the Reliance Engineering Co., Cincinnati, to draw plans for a water works, to cost $25,000, the bonds for which were recently sold. The building will be 35 x 60 feet, and the pump is to have a capacity of 100,000 gallons.

The Silent Typewriter Co., with its principal office in New York City, has been incorporated and capitalized at $8,000,000. The directors of the new company are: W. Carl Ely, William A. Douglas, Edward McM. Mills, William Ramsdell, Richard F. Rankine and George E. Burrows, all of Buffalo, and Samuel E. Moore, of Toronto.

Having the same directors as the Silent Typewriter Co., New York City, together with Elgood C. Lufkin and Robert W. Pomeroy, of Buffalo, N. Y.; John McKay and Robert Kilgour, of Toronto; Wellington P. Kidder, of Boston; Charles W. Colby, of Montreal, and James H. McGraw, of New York, the Noiseless Typewriter Co., New York City, filed articles of incorporation. The company is capitalized at $50,000.

The Industrial Engineering Co., Camden, N. J., mechanical engineer, has been incorporated with $10,000 capital, by J. Francis McLaughlin, 6229 Chew street; Jerome English, 1909 Hunting Park avenue, Philadelphia; Belford L. Myrtetus, 920 North Front street, Camden.

The Paterson Metal Stamping Co., Paterson, N. J., metal stampers, machinists, founders, etc., with $25,000 capital, has been incorporated by Benjamin F. Chase, 202 Kearney street; Frederic Beggs and William B. Burpo, 129 Market street, Paterson.

The Denver Watch Tool Co., Denver, Colo., has secured a charter through W. E. Sumpter, J. A. Abrams, and W. D. Smith. The company is capitalized at $50,000.

The Panalife Co., New York City, to manufacture hardware and household utensils, with a capital of $10,000, has these incorporators: Abraham M. Mendelson, Otto Sichel, 204 West 143d street; Harold C. Mendelson, 266 West 105th street, New York City.

The Schenectady Mfg. Co., New York, has incorporated with $24,000 capital to manufacture electrical appliances and machinery with these incorporators: John P. Wright, Boston; Thordore F. Bahr, 108 Amsterdam avenue, New York; Everett E. Lucas, Schenectady, N. Y.

The Gillie Machine Co., Tonawanda, N. Y., has been incorporated by John B. and William M. Gillie and Paschal S. Humphrey, all of Tonowanda, and the capital placed at $15,000. It is proposed to conduct a general machine shop.

Schuppe Automatic Shoe Polishing Co., New York City, to manufacture automatic shoe polishing machines, with a capital of $6,000,000, has these incorporators: A. E. Smith, 110 South Tenth street, Newark, N. J.; John O. Gempler and Edward Segar, 49 Wall street, New York.

New Construction:—

Boswell Bros., Cherokee, Ia., are building a new foundry and machine shop.

Extensive repairs and alterations are being made to the Weber Machine Shops, Peoria, Ill.

The Marquette & Southeastern railway is transforming the interior of the buildings at Marquette, Mich., formerly occupied by the Lake Shore Engine Works.

The new corrugated bar iron mill of the Portsmouth Steel Co., Portsmouth, O., which has been under construction for over six months, began operating May 25.

The Aluminum Foundry Co., Manitowoc, Wis., is having plans prepared for a foundry and factory three stories high, 60 x 70 feet, at an estimated cost of $20,000.

Thomas Murphy has purchased additional land in the locality of the Murphy Boiler Works, Peoria, Ill., near Main and Fayette streets, and will enlarge the plant at once.

The plant of the Guthrie Sheet Metal Works, Guthrie, Okla., has been purchased by C. W. Robinson, Pittsburg, and T. Reed. Extensive preparations are under way for the installation of machinery and equipment.

Hugo Gottschalk, Burnham, Pa., has purchased the necessary equipment for a complete machine shop which he is erecting at Burnham. The shop will be used for the manufacture of the Standard pan greasing and cleaning machine, which Mr. Gottschalk has invented.

The Valley Foundry Co., Canal Dover, O., has constructed a foundry building, with a frontage 80 x 84 feet, with auxiliary engine and boiler rooms, all of brick. The equipment will be modern throughout. The company will do a general foundry business and make a specialty of light and medium castings.

The Southern Wisconsin Foundry Co., Madison, Wis., has purchased a site for a larger plant at the east end, and will erect buildings to be ready for occupancy in September. The company is incorporated for $25,000 capital by H. A. Knabe, S. G. Scanlon and H. M. Vance. The president of the company is George C. Riley.

Representatives of the International Engineering Co., which recently decided to locate its plant in Erie, Pa., are in that city preparing for the erection of the plant just west of the city. Some material contracts have been awarded, and the real construction work will be begun in June and will be rushed to completion.

The DeHart Steel Tire Co., Springfield, Mo., which was recently incorporated for $100,000, will proceed at once to erect buildings and install machinery at Springfield. The officers of the new company are: President, H. N. Phillips, Poplar Bluffs, Mo.; vice president, M. H. DeHart, Cincinnati; treasurer and manager, W. H. Hansell, Springfield.

Worth Bros., of Coatesville, Pa., have started work on building a modern blast furnace stack about a mile and a half south of Coatesville. It is planned that the stack will have a weekly capacity of 1,000 tons of pig iron, the product to be used by the firm in its own manufacturing. Years ago, charcoal furnaces were numerous in Chester county, but this will be the first modern stack to be erected.

The Goetz & Flodin Mfg. Co., 109-133 West Chicago avenue, Chicago, is planning the erection of a new manufacturing plant north of the present site, which has been sold to a railway. The new plant will cover a site 300 x 300 feet, will comprise several buildings, and it is proposed to make it one of the most modern copper tank and machine shops. The cost is estimated at $125,000 to $150,000. All machines will have individual motors, power to be provided by the company's own electric plant.

Work on the construction of the new shops of the Manistee Iron Works, Manistee, Mich., is nearing completion. The shop is built on a concrete foundation, of steel construction, the gable ends and forge room being of brick. The roof is of fireproof composition, and the walls are entirely of glass, fastened directly to the steel studding. New and larger boilers have been installed, as will also be a 30-ton electric crane in the middle of the shop, as well as two smaller electric cranes. All the principal machinery will be direct-connected to electric motors. The present machine shop will be used as a foundry, and separate buildings are provided for the boiler and pattern shops, making it one of the most complete shops of its kind in the middle west.

The National Nut & Bolt Lock Co., 1130 Schofield building, Cleveland, whose incorporation was recently noted, advises that a new factory building will be erected and that the company is in the market for a gas engine, electric generators, punch presses, etc.

General Industrial:—

The Concord Iron & Metal Co., Concord, N. H., has filed articles of incorporation with a capital stock of $5,000.

The Albany Foundry & Machine Works, Albany, Ga., has leased the plant of the Bacon Equipment Co.

The Seneca Wire & Mfg. Co., Fostoria, O., recently filed articles increasing its capital stock from $100,000 to $150,000.

The Windsor Spring Co., Kenosha, Wis., has amended its articles of incorporation, increasing its capital stock to $100,000 from $15,000.

The American Steel & Wire Co. recently let contracts providing for carrying and shipping 100 cars of fence wire out of Fargo, N. Dak., during the season.

The Toledo Machine Tool Co., Toledo, O., is shipping two large punching presses to Chicago, and two carloads of bolts, etc., to Grand Rapids, Mich.

The building of the Campbell Machine Co., in the business center of Pawtucket, R. I., was recently sold at auction to George B. Champlin, for $29,500.

The Chicago & Alton railway foundry at Bloomington, Ill., which was closed down on account of a fire about a month ago, resumed operating in full May 25.

The Federal Furnace Co., Chicago, has filed a certificate increasing its capital stock from $800,000 to $1,200,000, and the number of its directors from five to six.

The John Thompson Co., Beloit, Wis., having settled with creditors, has resumed charge of its business and will again take up the manufacture of gasoline engines.

The Buettner-Shelburne Machine Co. has begun operating its new plant at Terre Haute, Ind. The concern was recently removed to Terre Haute from Sullivan, Ind. It manufactures mining machinery.

R. W. Hutchins and W. J. Stimpson have purchased the Angelo Bros. foundry at Winston-Salem, N. C., and will operate it as the Piedmont Foundry Co. They plan later to install a machine shop.

The Chamber of Commerce of Georgetown, Wash., is conducting negotiations with the officers of the Vulcan Iron Works, with a view to locating the proposed plant of the company at Georgetown.

The Stephenson Hydro-Electric Co., Marinette, Wis., is arranging to string wires to Green Bay, Wis., for the purpose of furnishing power to factories over the equipment of the Green Bay Gas & Electric Co.

The Clarenden Foundry & Machine Works, Clarenden, Ark., has been taken over by the Midland Machine & Supply Co., with the following officers: President, Parker C. Erwin; secretary and treasurer, C. F. Weidman; superintendent, H. J. Allin.

The Fort Wayne Iron Store Co., Fort Wayne, Ind., iron and steel, blacksmiths' supplies, for manufacturing, etc., advises that the recent increase in capital stock was made necessary through the growth of the company's business the past year.

The Touhill Iron Works, Scranton, Pa., has completed one of the largest castings made in northeastern Penn-

sylvania, for a western firm. The casting weighed over 60,000 pounds, and when taken out of the sand was found to be perfect.

The Ohio Bevel Gear Co. and the Cincinnati Gear Works, Cincinnati, have been merged into a new company, the Cincinnati Gear Co. The Ohio Bevel Gear Co. located in Cincinnati about a year ago. The president of the new concern is Philip Fosdick.

The Wilder Metal Coating & Mfg. Co., Connellsville, Pa., is preparing to operate its plant in the old building of the American Aluminum Coating Co., which it now succeeds at South Connellsville. As now planned, the capacity of the company will be 5,000 tons.

The Holdsworth Foundry Co., Brooklyn, N. Y., maker of iron castings, whose incorporation was recently noted, has purchased the business formerly conducted by William H. Holdsworth & Sons, and has engaged Mr. Holdsworth as manager. He has had charge of the business for the past 23 years.

Among recent crane shipments by the Northern Engineering Works, Detroit, are mentioned a 7½-ton, three-motor electric crane to the Cummings Foundry, Chicago; a 7½-ton, three-motor electric crane for the United Lead Co.; a 5-ton, 38-foot span crane for the West India Electric Co., and a 6-ton, two-motor electric crane for Valentine Bohl Co., Waterbury, Conn.

The Rockwell Furnace Co., 26 Cortlandt street, New York City, was recently incorporated as engineer and manufacturer of metallurgical furnaces, and fuel oil and gas burning appliances. The officers and employes of the company have been connected for a number of years with the Rockwell Engineering Co., of New York City.

The Ferracute Machine Co., Bridgeton, N. J., is completing what is said to be the largest steel press ever made in the United States, for the L. H. Montross Co., of Wilmington, Del. The press weighs something over 100 tons, and has nearly 1,000 distinct parts. It is designed to make steel caskets in two operations from a sheet of metal.

The stockholders of the Vulcan Iron Works, Wilkesbarre, Pa., recently reelected the following directors: A. H. Van Horn, W. A. Lethrop, E. H. Jones, I. A. Stearns, Thomas H. Atherton, Charles P. Hunt, Richard Sharp, Isaac N. Thomas, E. A. Mulligan, T. F. Ryman, and H. Ashley. These directors will meet shortly to elect officers.

The first castings were recently poured at the new foundry of the Yakima Iron Works, North Yakima, Wash., and the results are considered very successful. A satisfactory number of orders has been received, and the prospects are that the foundry will be kept working at capacity the remainder of the year. J. H. Arrowsmith is president of the concern.

The reorganization of the Northwestern Expanded Metal Co., 930 to 950 Old Colony building, Chicago, following the resignation of E. H. Jones, secretary and general manager, and A. W. Rush, engineer, resulted in the election of Howard N. Foote as general manager, W. G. Bartlett, secretary, and Ernest McCullough, consulting and sales engineer.

The Dayton Globe Iron Works, Dayton, O., is constructing an improved new American turbine for the power plant of the Winchester & Washington City Railway Co., Winchester, Va. Each unit will consist of a pair of 49-inch turbines, mounted horizontally, and enclosed in a steel flume, 12.6 inches in diameter. Each pair of wheels develops 1,000 horsepower under 22.6 inches working head.

The Pencoyd Metal Co., Manayunk, Philadelphia, whose incorporation was recently noted, advises that its output of special metals will include strong, or anti-corrosive metal, gilding metal, silver plating metal and lustro metal, for tubing, with a nickel effect. Furnaces will be erected, and rolls and drop forging presses installed in the mills, which will be located at West Manayunk, Montgomery county, Pa.

The Phillemac Rolling Mill Co., which has leased the Bracket Bridge Co.'s plant in Glendale, O., recently organized at Youngstown, O., by the election of these officers: President, Nelson B. Cramer, Cincinnati; vice president and general manager, J. P. McCaslin, Sharon, Pa.; secretary and treasurer, C. L. Stein. The company plans to instal its machinery this month, and expects to begin operating about July 15, with a 10-inch mill, later to be supplemented by an 8-inch mill.

Trade Notes:—

G. W. Benton, secretary and treasurer of the Conneaut Shovel Co., Conneaut, O., shovel specialists, has just returned from a business trip through the south where he established agencies with J. E. Lastrapes, 524 Gravier street, New Orleans, and with the Atlanta Mill Supply Co., Atlanta, Ga. A large stock of shovels has been placed with the New Orleans agency especially to take care of trade in that section. Both these agencies were necessitated by the large trade which the Conneaut company is getting from the south.

The division sales offices of the Colorado Fuel & Iron Co., W. A. Wetmore, division sales agent, have been removed from Oakland, Cal., to rooms 614-615 Balboa building, Second and Market streets, San Francisco.

S. P. Fillman, superintendent of the Alaska Graphite Co., Oakland, Cal., sailed from San Francisco May 28 to again take charge of the company's graphite properties. The small shipment delivered last season found such a ready sale that it is the intention of this concern to make heavier shipments this season to supply the entire Pacific coast trade.

The R. D. Nuttall Co., Pittsburg, announces that it has added to it already comprehensive list of gears and pinions, the well known Titan brand of manganese steel gears and pinions, having arranged with the Atha Steel Casting Co. for their exclusive sale. This places the Nuttall company in a position to furnish practically everything in the way of gears and pinions for every requirement of traction and electric railway service.

Fires:—

The foundry department of the Trumbull Mfg. Co., Warren, O., was damaged to the extent of $1,500, May 27.

The plant of the Lewis Machine & Iron Works, Anniston, Ala., was severely damaged May 28, caused by locomotive sparks. The loss is placed at $8,000.

The main building of the Imperial Stove Works, Ltd., Morrisburg, Ont., was gutted May 26. Machinery in the polishing room, nickeling and mounting rooms and carpenter shop was destroyed but the foundry and office were saved. The loss is placed at $25,000, fully insured.

Damage placed at $2,000 was inflicted by fire to the plant of the McKim Foundry & Machine Co., Lockport, N. Y., May 29. A number of patterns were damaged by water. The loss is covered by insurance.

The plant of the Best Mfg. Co., Pittsburg, manufacturer of piping equipment, was visited by fire June 3 which caused damage of about $25,000. The operations of the plant have not been interrupted by the fire.